OCTOBER 10, 1936

Railway Age

Founded in 1856

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INCREASED TRAVEL

...indicates an even greater demand for air conditioned cars next year

In planning your air conditioning program for next year, (and we recommend that it be done now) consider especially dependability. With closed windows and lack of ventilation, failure of the air conditioning system becomes a serious matter.

During 1936 the installations of the Pullman Air Conditioning System have again duplicated their record of 1935 . . . 99 6/10 per cent perfect performance . . . a significant indication of reliability.

RELIABILITY
IS THE FIRST REQUIREMENT OF AIR CONDITIONING

PULLMAN-STANDARD CAR MANUFACTURING CO.
CHICAGO • PITTSBURGH • WASHINGTON, D. C. • NEW ORLEANS • CLEVELAND
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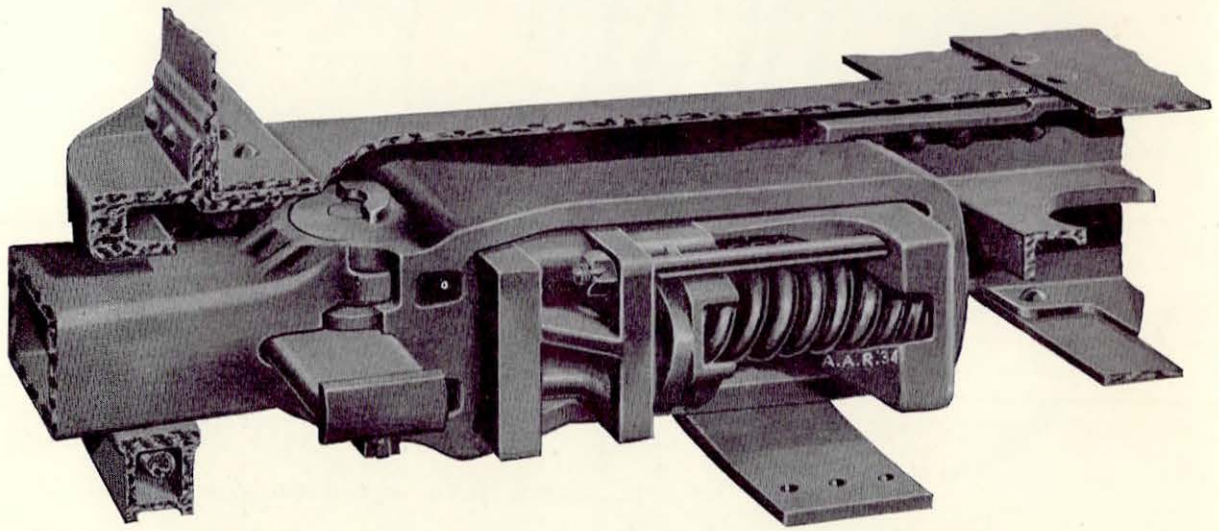
San Francisco . Sales Representative . . Latham McMullin, Russ Building

PULLMAN
DIRECT DRIVE AIR CONDITIONING SYSTEM

Reduce Railroad Operating Costs

The A. A. R. Alternate Standard E Coupler with Swivel Shank

Angles without reduction of bearing area in buff or pull
Eliminates Deformation and Wear of Butt and Key
REDUCES Coupler and Attachment REPAIR EXPENSE



Ideal, Compact Application with A. A. R. Certified M-17-A. Draft Gear

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MINER
DRAFT GEARS

protect better

and

last longer

W. H. MINER, INC. CHICAGO

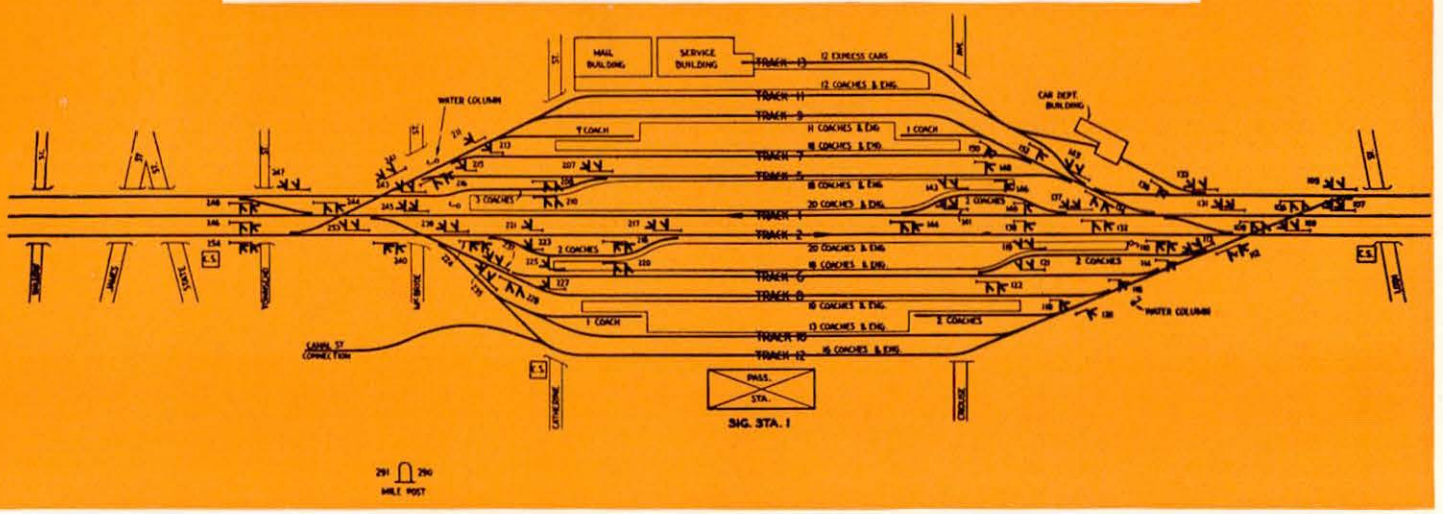
SYRACUSE INAUGURATES MOD

Modern New York Central Terminal uses Modern Signal Control System for extensive Terminal Area

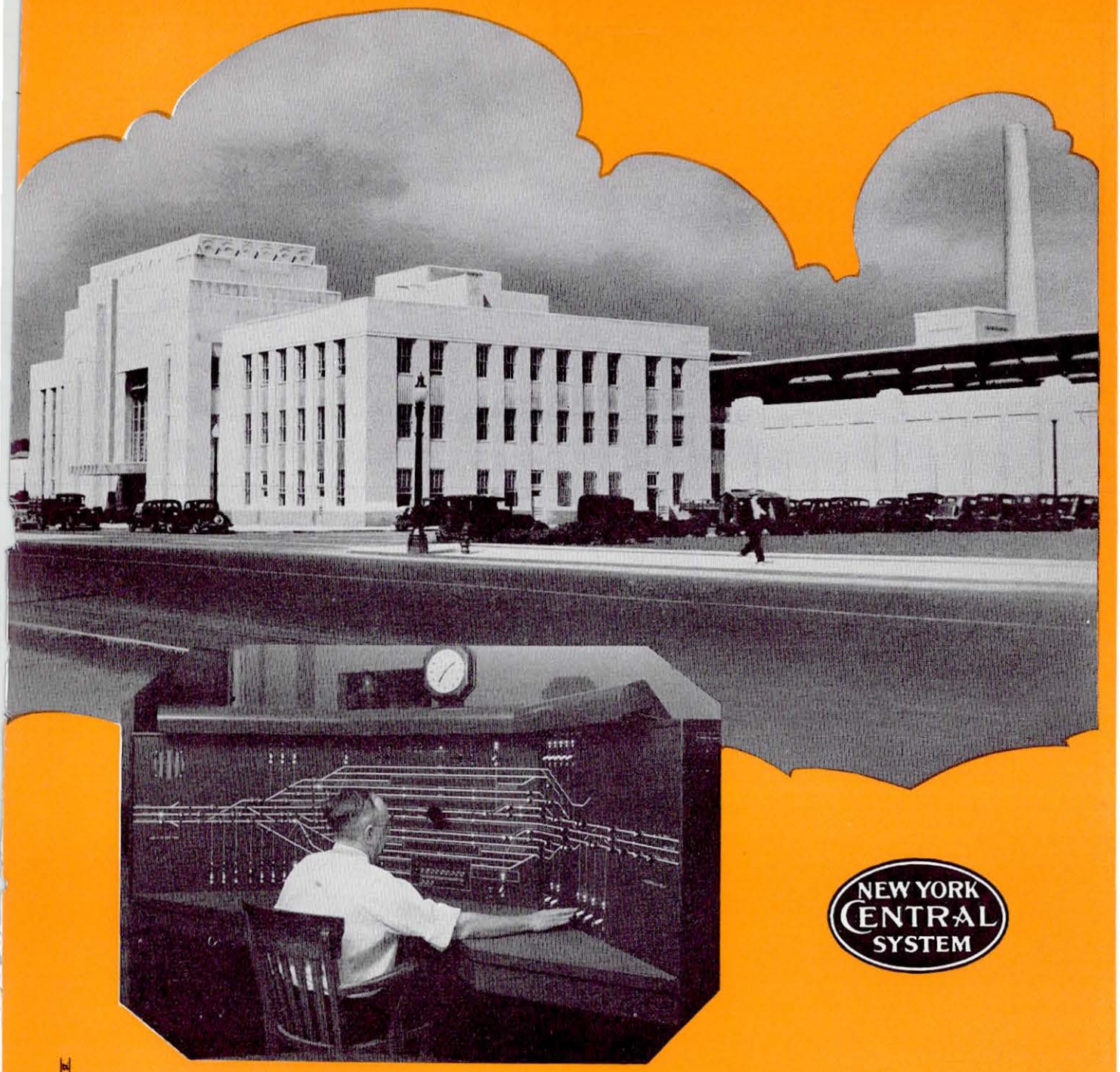
September 24th marked the completion of the Syracuse Terminal project when a complete modern Terminal was placed in service on one of the busiest track areas on the New York Central Lines between New York and Buffalo.

G-R-S Electric Interlocking plays an important part in this modernization. One man at a control machine, easily and quickly directs numerous train movements over the entire controlled area. This installation again emphasizes that ease of manipulation and speed of operation are characteristic of Modern Electric Interlocking. At similar installations, low operating and maintenance costs have also been characteristic of this method of control.

There may be locations on your road where this system, which is self-liquidating, can yield big returns either at new installations or by plant consolidation.



ERN ELECTRIC INTERLOCKING



NEW YORK CENTRAL SYSTEM

We make studies without obligation.
Why not consult our nearest office?

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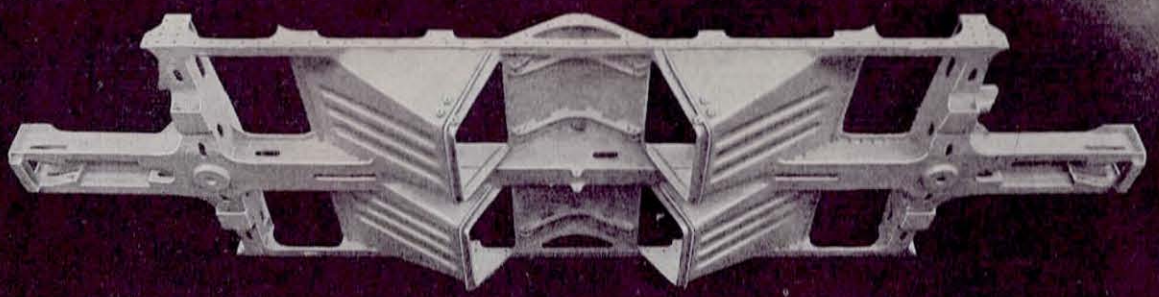
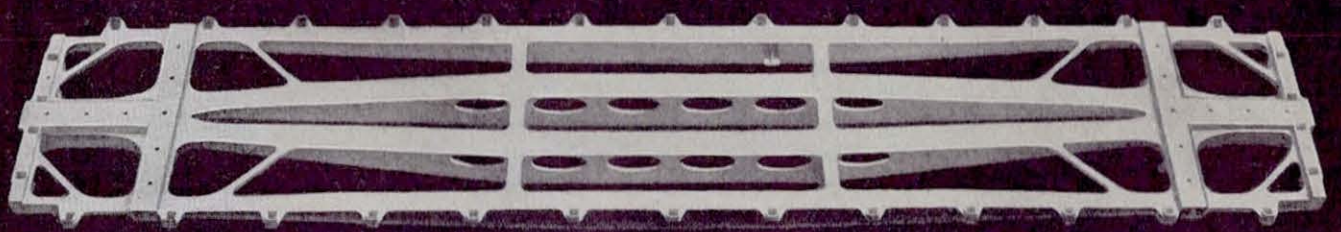


HOPPER CAR UNDERFRAME



FLAT CAR UNDERFRAME

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COMMONWEALTH

FOUNDATIONS

FOR MODERN RAILROAD EQUIPMENT INSURE MANY ECONOMIES

More than 25% of all railway operating expense is charged to maintenance of equipment.

Commonwealth one-piece Locomotive Beds, Water-bottom Tenderframes, and Underframes for all types of freight cars offer highest returns on the investment.

The economies effected include longer service life of the equipment, greater serviceability, more mileage between shoppings, and bigger savings in maintenance costs.

Thousands of strong, permanent Commonwealth foundations are in service under modern steam power, large tenders, Diesel locomotives, and freight cars of all types.

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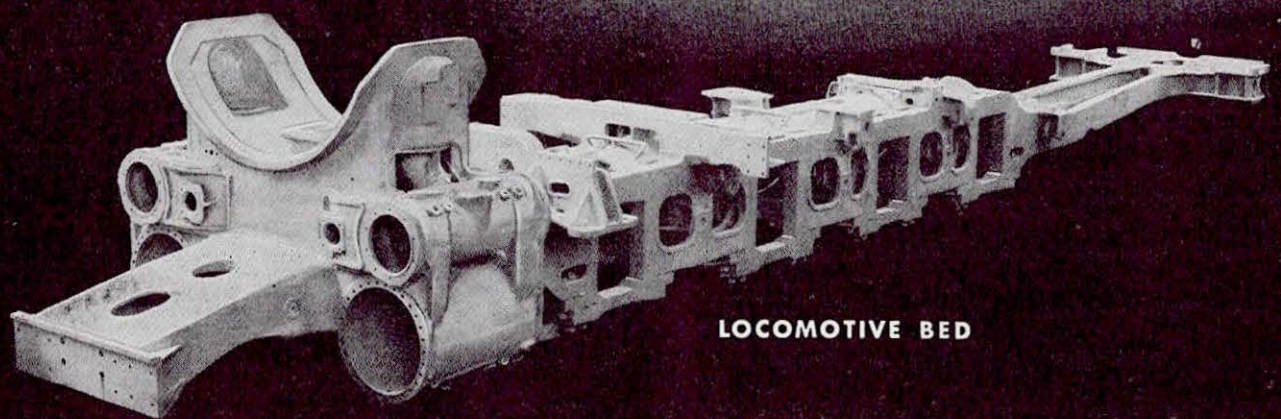

LOCOMOTIVE BED

PRODUCTS

RAILROAD EQUIPMENT NEWS

Robert S. Binkerd, vice president and director of sales, The Baldwin Locomotive Works, acts as guest columnist for Merryle Stanley Rukeyser, who is on vacation.

By ROBERT S. BINKERD,
Vice President, The Baldwin Locomotive Works.

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For as long as the modern economic system has been in existence, each period of depressed activity has, by the fact of that depression, created needs, the satisfaction of which will produce recovery. The political idea is that it is necessary to think up something new; but the truth is that we have only to create conditions which will encourage the satisfaction of the needs already in existence.

No more interesting illustration of this fact can be found in this country today than on the Class 1 railroads.

The freight car supply on January 1, 1936, was only 1,859,945 cars, as against an ownership of 2,327,518 on January 1, 1929. In other words in six years nearly 500,000 freight cars have disappeared; and of those which are left another 500,000 have archbar trucks which are not suitable for the high speeds of freight transportation today.

If the railroads of this country should buy 125,000 new freight cars a year for the next five years, even then they would not catch up with this situation. And for the first time in some fifteen years there appears a real possibility that we will have a car shortage for at least the peak movement this Fall.

Yet orders for new freight cars in 1935 amounted to only 17,784!

Again on January 1, 1936, the Class 1 railroads had only 41,584 passenger train cars of all descriptions as against 53,097 on January 1, 1929. Thus in the past six years over 11,000 passenger train cars have disappeared. Now that travel by rail is increasing and fares are reduced, it is doubtful if the purchase of 2,000 new passenger train cars per annum for the next five years will catch up with this situation.

Yet orders for new passenger train cars in 1935 amounted to only 63!

THE BALDWIN LOCOMOTIVE

the papers:

Again on January 1, 1936, the railroads of the United States had 46,594 locomotives of all classes as against 59,470 on January 1, 1929. Thus in the past six years nearly 13,000 locomotives have disappeared; and of the balance over 90 per cent are now more than ten years old and scarcely 3,500 can be classified as truly modern. If, during the next five years, the railroads of the United States should purchase 2,000 new locomotives annually, they would hardly scratch the economies and efficiencies incident to the substitution of modern for obsolete power.

Yet orders for new locomotives in 1935 amounted to only 27!

When one considers that only about one-tenth of all railroad investment is in locomotives: that nearly one-third of all railroad operating expense revolves around the repair and operation of this one-tenth of the investment, there exists a leverage in the rapid modernization of the existing locomotive inventory which more than any other single thing can lift our railroads back to reasonable prosperity and still higher standards of service than we have ever yet known.

During the past four years we have done little to create conditions which would encourage the great field of demand above indicated to come into the market. We have done a number of things to increase the cost of running the railroads and practically nothing to decrease that cost or to help them improve their credit. Yet old man necessity may even now be pushing his way through this barrier despite everything!

In conclusion let me add that just as the Queen Mary and the four new modern ships ordered by the Canadian Pacific are being powered with steam and not with Diesel engines, so the bulk of the modern locomotives required by our railroads will continue to be steam for long after the readers of this article have ceased to take an interest in what they are.

WORKS ••• PHILADELPHIA

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IN safety glass, the name Duplate stands for high quality, proven dependability, and outstanding performance. Its acceptance by leading users of safety glass, and its past record of excellence in service, reflect the knowledge and experience of its maker . . . the Pittsburgh Plate Glass Company. This company has been internationally famous for the manufacture of quality glass products for half a century.

Give your passengers the benefit of Duplate Safety Glass. It not only provides them with additional protection against glass injuries, but also increases their riding *comfort.* For Duplate is so compounded that it reduces the eye-fatiguing glare of intense, reflected sunlight, and thus makes the windows of your cars more pleasant to look through. The Pittsburgh Plate Glass Company, Pittsburgh, Pa., welcomes requests for complete information about Duplate Safety Glass or Duolite Safety Pennvernon Glass.

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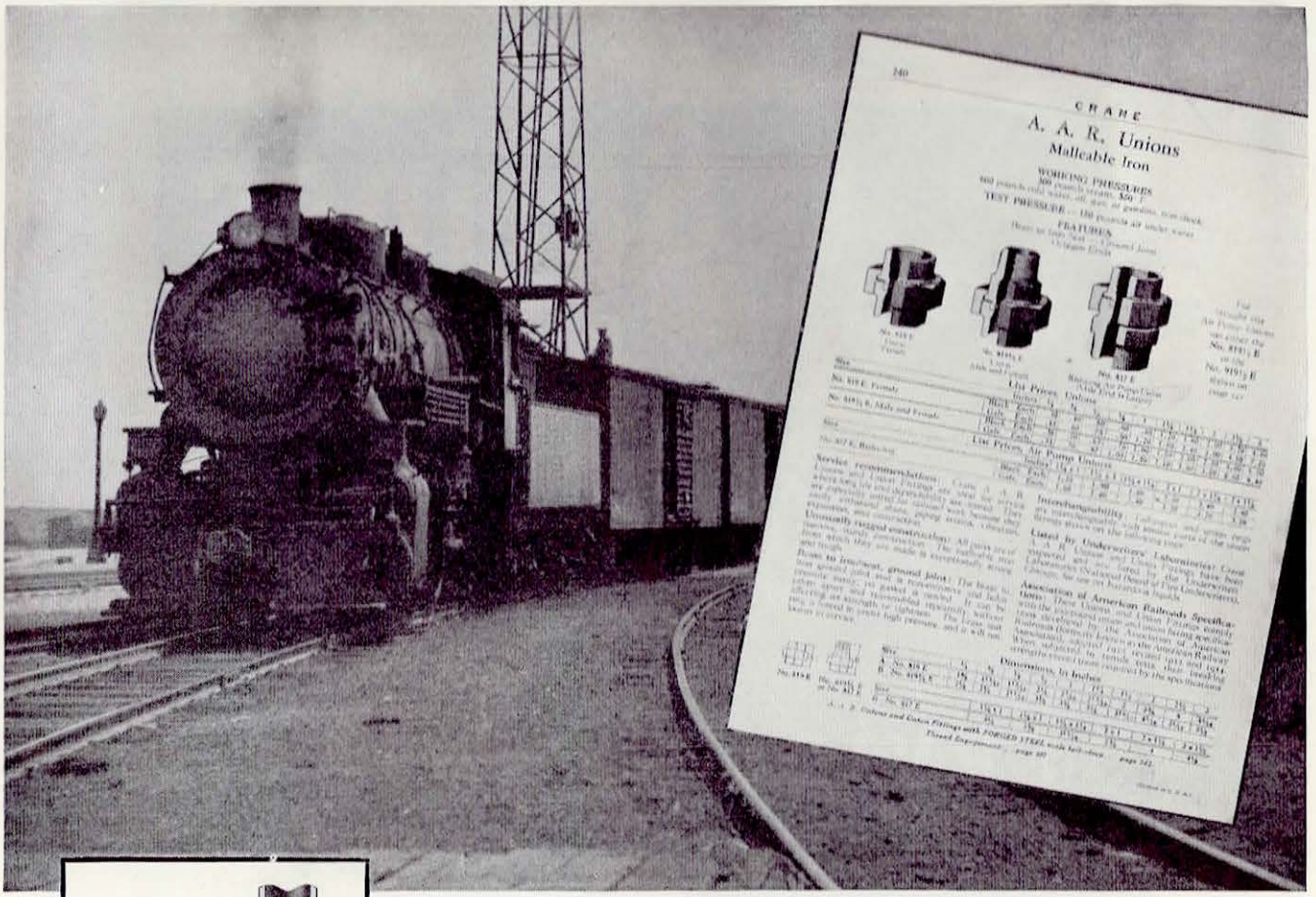
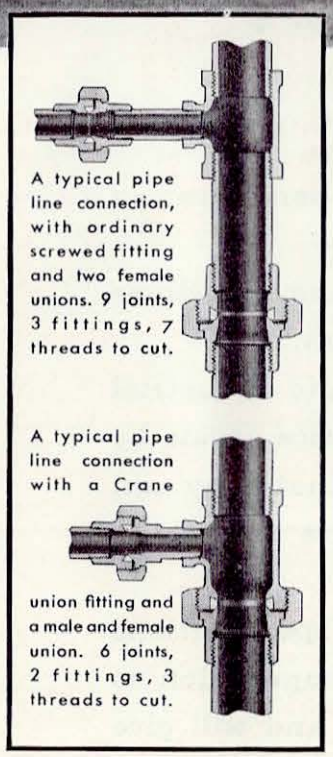
Repaired springs are rebuilt to the same rigid specifications and by the same skilled workmen under expert supervision as those used in the manufacture of new springs, and will give the same high standard of performance.

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS





A typical pipe line connection, with ordinary screwed fitting and two female unions. 9 joints, 3 fittings, 7 threads to cut.

A typical pipe line connection with a Crane union fitting and a male and female union. 6 joints, 2 fittings, 3 threads to cut.

Crane A. A. R. Unions and Union Fittings are described and listed on pages 240 to 244, the new Crane No. 52 Catalog.

Fewer JOINTS
Less MATERIAL • *Less* LABOR

In almost every locomotive or shop piping installation there are connections that can be made at lower cost, in less time and with fewer joints (hence, fewer chances of leaks) by the use of the proper Crane A. A. R. Unions and Union Fittings.

Crane Co.'s long experience with piping layouts is at your disposal and will bring these advantages to you at no additional cost. Crane A. A. R. Unions, Union Fittings and Valves add a still further factor of safety because of the care and precision with which they are made. This enables them to withstand better the strains resulting from making-up joints, expansion, contraction, vibration and other severe conditions that attend railroad service.

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HOW CLOSE IS A CAR SHORTAGE

HEAVY BOOKINGS IN SHEETS, BARS

Consumer Demand f... ished Materials Taxe... ducing Facilities

CHICAGO TRADE FIGURES UP

Sales of Large Department Stores 20% Ahead of 1935 Volume.

Loadings Rise 17,560 Cars to Total 807,070

Rail Freight Holds 177,135 Above Year Ago; Equal to 89.45% of Avera...

POLISHED PLATE GLASS OUTPUT RISES IN AUG...

FARMERS HAVE EIGHT BILLIONS INCOME IN 1936

COTTON SPINNING TRADE AT 115 PCT. OF CAPACITY

SET AUTOMOBILE OUTPUT AT PEAK MARK SINCE 1929

Production 17.2 Per Cent Above Last Year.

Shippers to Discuss Rail Equipment

COAL INDUSTRY IMPROVES

Operations in Many of the Mines Are Now at Capacity Levels.

RAILROAD INCOME HIGHEST SINCE '30

Operating Net of Class I Road- $364,697,978 in E... Eig...

RAILROADS AUGUST NET UP 36.9 PCT. OVER '35

MIDWEST TREND UPWARD

Cool Weather Stimulates Trade—Farm Situation Improves.

SHIPPERS WILL USE MORE CARS THAN YEAR AGO

ELECTRIC POWER OUTPUT FOR WEEK BEST ON RECORD

HIGH RATE CONTINUES IN STRUCTURAL STEEL

Industry in Strongest Position Since Depression Started, According to V. G. Iden.

RETAIL TRADE UPTURN TO AID WHOLESALERS

More Buyers Expected This Week to Place Additional Orders for Fall Merchandise.

EXPECT LOADINGS TO RISE IN GREAT LAKES REGION

New Peaks in Business Activity Foreseen During the Closing Quarter of This Year

SALES RISE SHARPLY HERE

Department Stores' Gain Highest Since Fall Season Started.

Freight Traf... Largest Since Fall of 1930

Loadings by classifications follow:

	Week Sept. 19,	Change from— Prec. wk.	Yr. ago.
Miscellaneous	325,748		
Less than carlot	170,423	+34,081	+55,077
Coal	136,956	+21,513	+ 5,316
Grain	33,075	+15,791	+ 3,007
Live stock	18,738	+ 5,357	+ 9,474
Lumber	35,453	+ 1,034	+ 204
Ore	59,232	+ 3,573	+ 2,376
Coke	9,856	+ 7,453	+21,868
		849	+ 3,416

EXPECT RETAIL SALES TO EXCEED 1931 FIGURE

RAIL CHIEFS SEE FINANCIAL SKIES CLEARING

Jobs, Wages, Sales Higher in Month

Steel Output Hits 74.4 Pct. of Capacity

BRISK UPTURN IN SOUTHWEST

Cooler Weather Stimulates Trade, While Building Also Gains.

Home Building During August Best Since '31

RETAIL BUSINESS WELL OVER 1935

NEW ENGLAND PLANTS BUSY

Many in the District Operat... Capacity—Retail Sales

PHILADELPHIA SALES UP

Wholesale Trade Especially Active, Showing 20% Gain Over 1935.

American Railway Car Institute

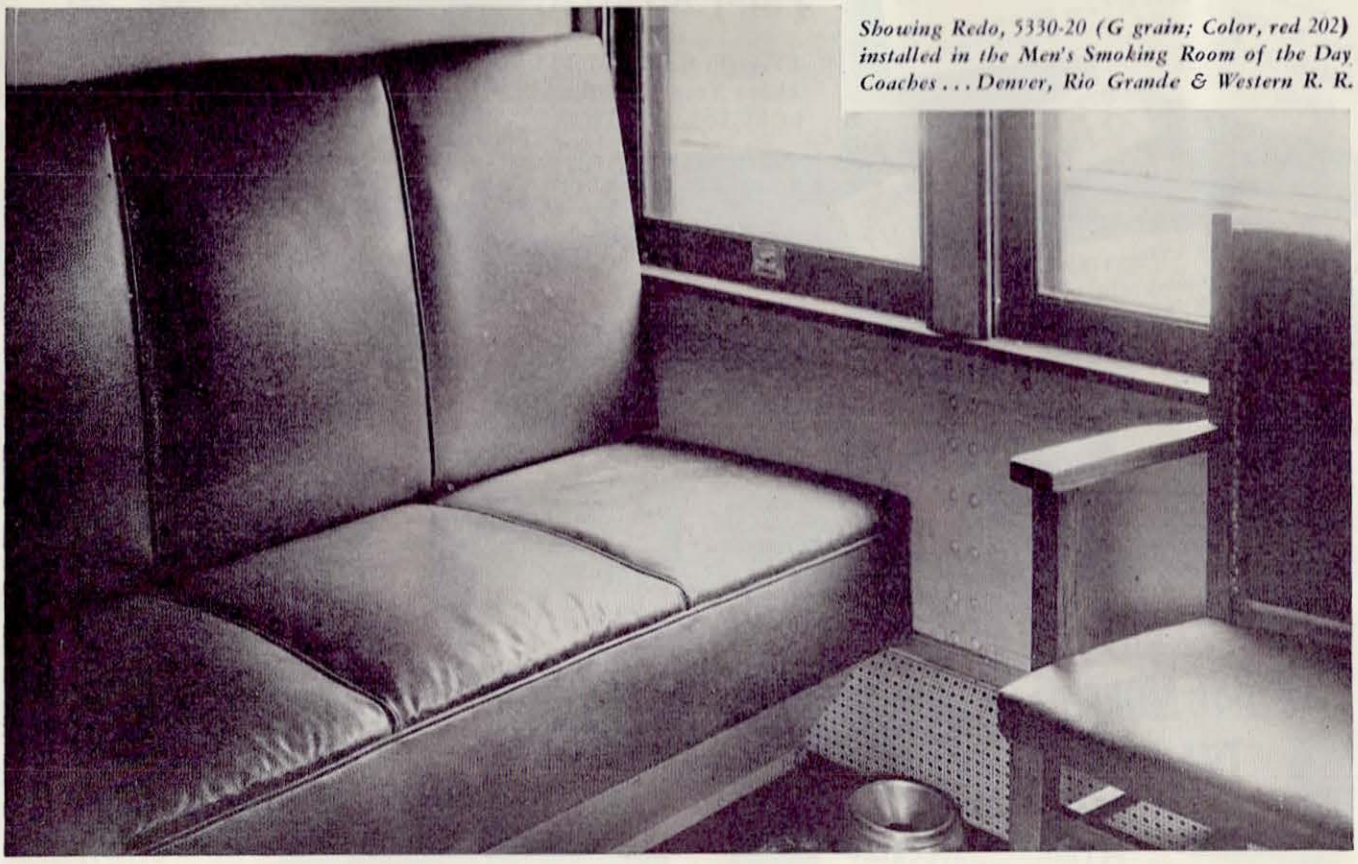
19 Rector Street — New York, N. Y.

AUTO FACTORY EMPLOYMENT IS ABOVE 1929

Larger Automobile Loadings Forecast

INDEX OF CAPITAL GOODS RECORDS GAIN IN WEEK

Private Building at New High Mark



Showing Redo, 5330-20 (G grain; Color, red 202) installed in the Men's Smoking Room of the Day Coaches . . . Denver, Rio Grande & Western R. R.

Redo the proven, perfect TRANSPORTATION FABRIC

REDO is a specially constructed upholstery material built for wear, appearance and economy. It offers:

PERFECT TAILORING . . . *ease and softness in handling.*

STRENGTH . . . *tremendous resistance to abrasion and flexing.*

APPEARANCE . . . *leatherlike in good looks and wear.*

VARIETY . . . *solid or two-tone Spanish effects in attractive colors and grains.*

This rugged upholstery fabric—with its handsome leather-like appearance—is recommended for Smoking Car seats; for Engine and Caboose cushions, arm rests, etc., and is particularly suitable for deep spring construction.

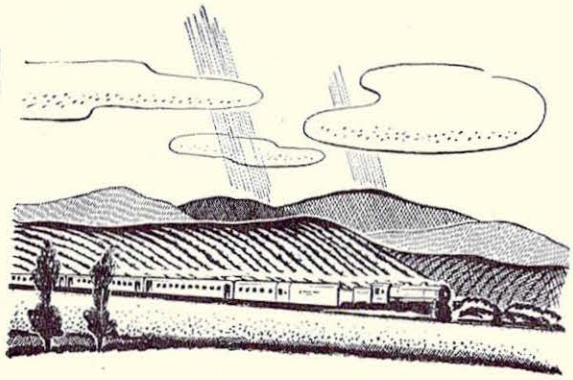
Redo UPHOLSTERY

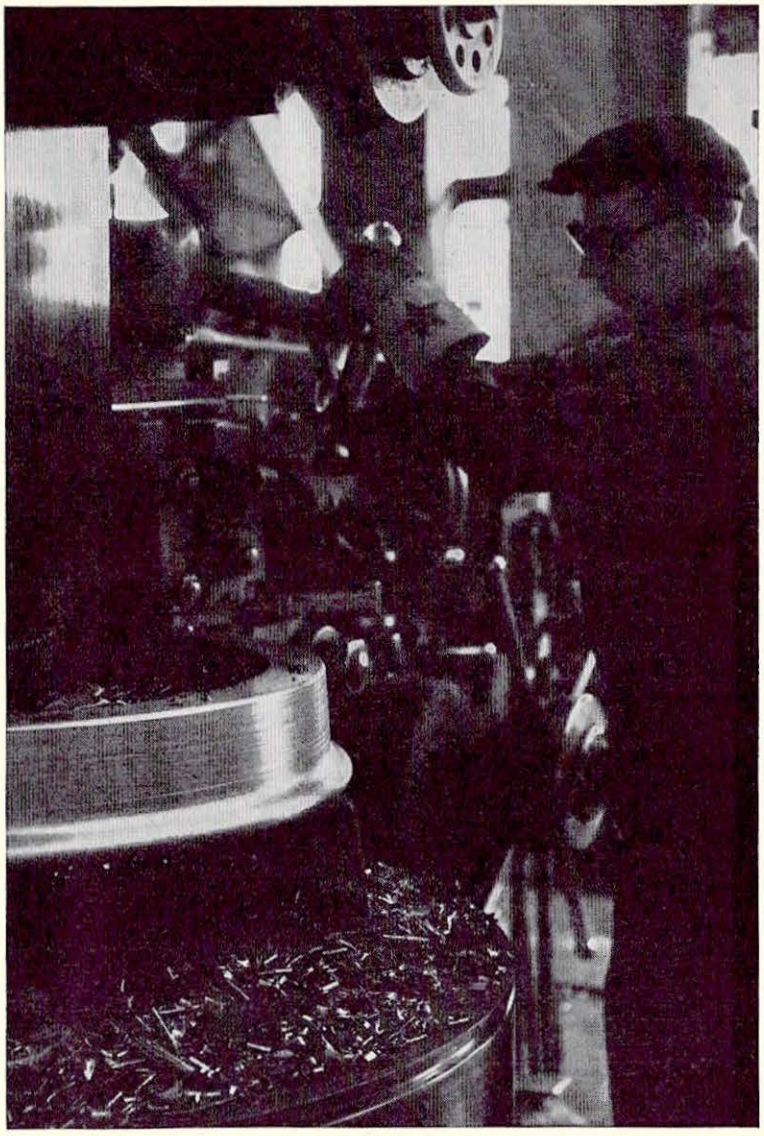
A Goodall-Sanford PRODUCT

L. C. CHASE & CO., Inc., selling division of Goodall-Sanford, 295 Fifth Avenue, New York

BOSTON CHICAGO DETROIT SAN FRANCISCO

More wear between turns means more Money-Mileage





EVERY railroad man who buys or specifies wheels is seeking it—more money-mileage—and he needn't look beyond ARMCO MULTIPLE-WEAR WHEELS. Here are wheels made from tough, uniform, long-wearing steel, and machined accurately to insure smooth-riding qualities. Time after time these heavy-duty wheels have come through with more wear between turns. Time after time they've "earned their keep." ARMCO MULTIPLE-WEAR WHEELS are a distinguished-service member of a family that includes such respected names as ARMCO ONE-WEAR AND TWO-WEAR WHEELS, and ARMCO HEAT-TREATED WHEELS.

We suggest you get acquainted with this "family" if you already do not know them. Any of the offices listed below will be glad to make the introductions.

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Our Steam Railroads—The Railroad Track—The Steam Locomotive—Electric Locomotives; Gasoline and Oil Motors—Freight Cars—Passenger Train Cars—Tomorrow's Trains Become Today's—Passenger Stations and Terminals—The Operation of Trains.

1936. 4th. 312 pages, 276 illus., 7 x 9½ in., cloth, $3.00

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Without going into the details of accounting procedure, Mr. White clearly explains the accepted method of analyzing and interpreting railroad statistical data. He describes how the figures produced in accounting departments should be used in the study of railroad operating results; how these figures reflect the various activities of the railroad and its efficient or inefficient operation as a whole or in any of its departments.

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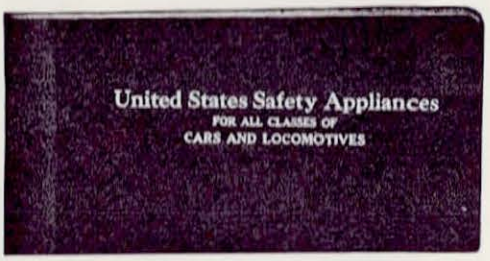

United States Safety Appliances

(A. A. R. Edition)

The 14th edition of this book contains all the new laws, I. C. C. rulings and A. A. R. specifications since the last edition in 1928. More than 250,000 of these books have been sold.

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A fascinating human interest story of the early American and Canadian railroads and of the men who built and ran them. The author, an old railroad man, tells of the beginnings of the Erie, the Pennsylvania, the Baltimore and Ohio, the New York Central, the first Pacific railroad, the Santa Fe, the Rio Grande, the Canadian Pacific and other lines. It is illustrated with reproduction of wood cuts of early locomotives and railroad scenes.

1926. 4th (Centenary). 338 pages, 17 illustrations, 6 x 9 inches, cloth. $2.50

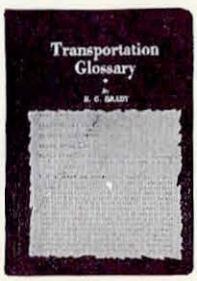
Who's Who in Railroading

The 9th Edition of what was formerly the "Biographical Directory of Railway Officials of America" is based upon a complete resurvey of the field by means of original questionnaires. Biographical sketches of some 4,000 railroad officials, equipment manufacturers, economists, members of regulatory commissions and others whose work is directly connected with the railroad industry of North America are presented. The descriptions of these leaders of the rail industry include personal information, such as their family connections and social, religious and political affiliations, as well as a complete outline of their professional careers.

1930. 579 pages, 6 x 9 x 1⅝ inches, cloth. $3.00

Transportation Glossary

By H. G. BRADY

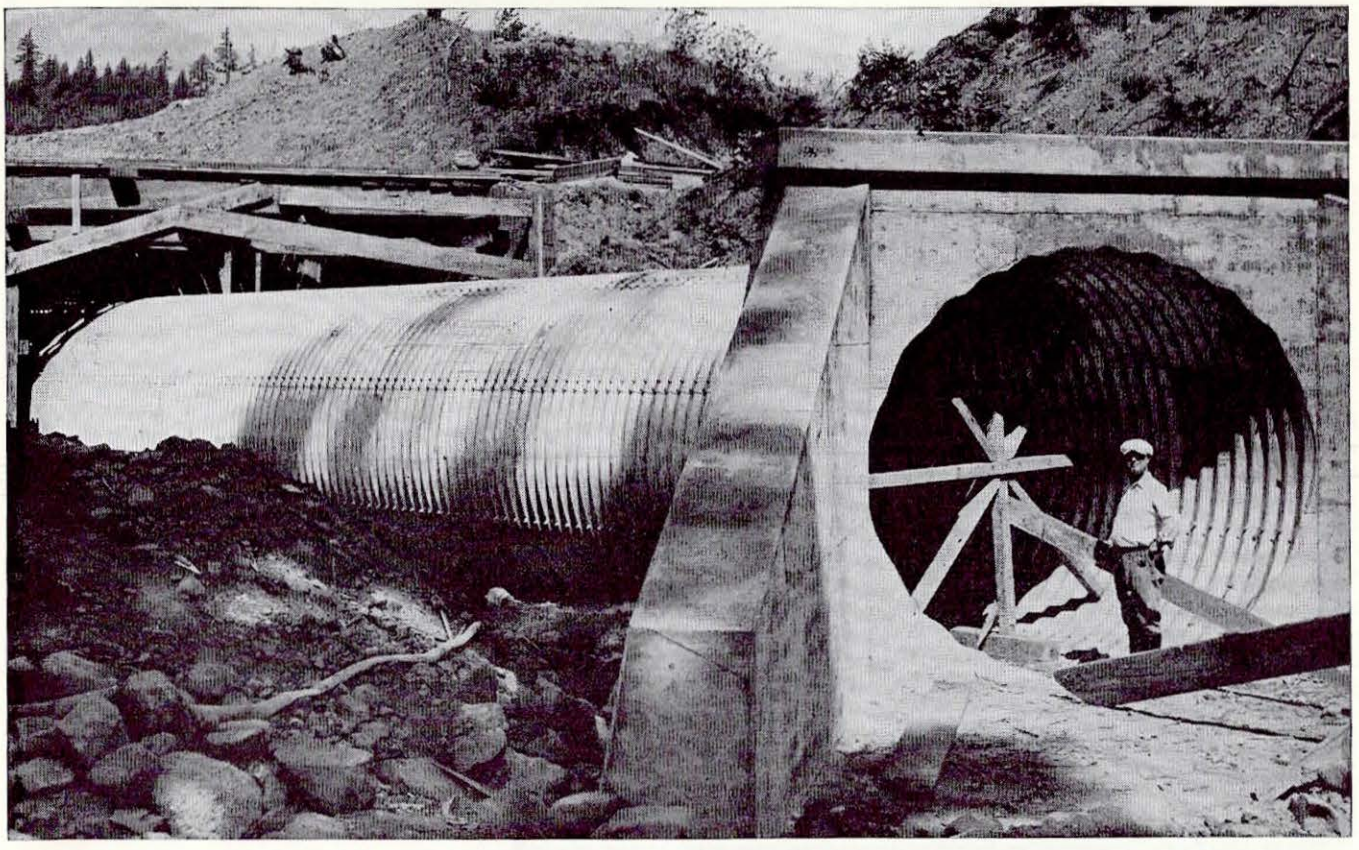


Technical and semi-technical terms, phrases and expressions in more common use in railway, highway, air and marine transportation, and in port traffic are concisely defined in this handy reference book. Ordinary dictionaries, thesauri and law book sources furnish little information on transportation terms and this book fills a long felt need. It is printed in large clear type and cross references facilitate quick tracing of desired information.

1929. 119 pages, 5 x 7 inches, flexible. $1.75

For Better Drainage Structures at Lower Cost . . .

American Sectional Plates



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Right from the outset the inherent economy of American Sectional Plates is obvious. No troublesome designing or expensive plans are necessary. Once you determine the diameter of the culvert, the length, and the correct gauge to support the anticipated load, a single specification for materials will suffice. Engineering time is saved.

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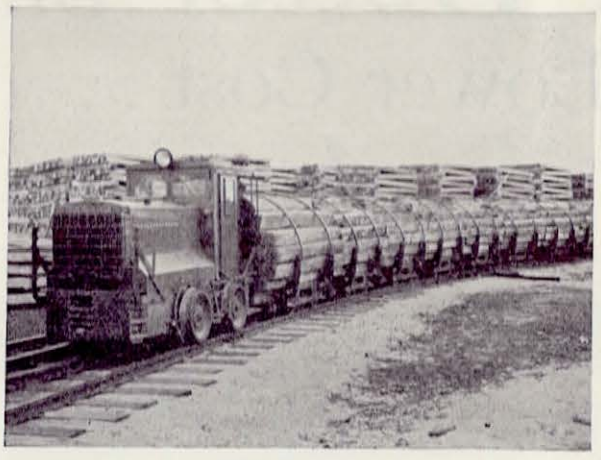
UNITED STATES STEEL

WOOD PRESERVATION



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POURING A HEAT OF ELECTRIC FURNACE STEEL AT THE BETHLEHEM PLANT OF BETHLEHEM STEEL COMPANY

See Bethlehem Advances at the Metal Show

ELECTRIC furnace steels, sheets, strip, wire and the processes that make them, will be incorporated in Bethlehem's exhibit at the National Metal Exposition in Cleveland's Public Auditorium, October 19 to 23. Located at the head of Aisle F, the Bethlehem booth shows concisely the great care and strict control which govern the production of quality steel products.

Here you will see some of the contributions Bethlehem has made to advances and improvements in the manufacture of steels for the ever-increasing demands of industry. You will see, too, the ways in which Bethlehem has been geared to increased production—the steps which this organization has taken to be able to supply the improved grades and forms of steel required by every branch of modern industry. Outstanding features of the Bethlehem exhibit are described on the next page.

BETHLEHEM STEEL

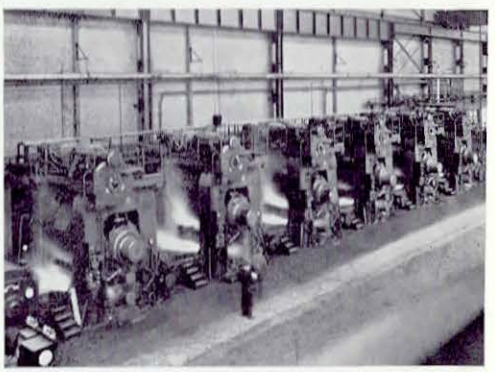
BETHLEHEM STEEL COMPANY

In Bethlehem's Exhibit at the National Metal Exposition

BETHLEHEM Steel Company's services as a producer of steel for virtually every purpose and the contributions made by this organization to further advances in fine steel making will be graphically illustrated in the exhibit of processes and products at the National Metal Exposition. Even a casual inspection of the murals, motion pictures and products which make up the exhibit will reveal the scope of Bethlehem's production facilities and ability to meet the varied demands of industry.

Continuous Strip-Sheet Mill Operation

Highlight of the exhibit will be the moving panorama of key operations in the production of the flat-rolled steel that is increasingly important to modern manufacturing. Painted in Bethlehem's continuous strip-sheet mill at Lackawanna, the scenes give an excellent idea of the way in which Bethlehem is geared to meet the demands of industry for steel sheets and strip. Synchronized with the panorama of mill operations is a working model of one of the battery of 26 modern box-annealing furnaces at this mill.

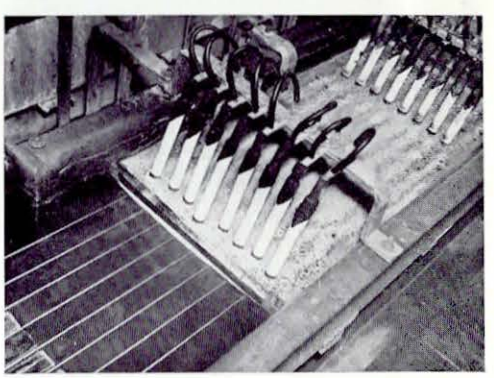


The Making of Alloy Steel

A new talking picture, "The Making of Alloy Steel," shows in detail the painstaking care and the craftsmanship that go into Bethlehem's production of alloy steel. The picture conducts you step by step through the various manufacturing processes and gives an excellent idea of the strict metallurgical control that fits these steels for the high responsibilities which they carry in airplanes, automobiles and other applications. It shows the manufacture of a quality product on a tonnage basis.

Wire – and the Bethanizing Process

"Wire," another new talking picture shown in the Bethlehem exhibit, tells the story of wire-making from ore dock to finished products. The bethanizing process, which applies a uniformly thick, highly ductile coating of 99.99 per cent pure zinc to steel wire, is an important and interesting part of this picture. Interesting, too,—and conclusive proof of the high purity of the bethanized coating—is the acid test in which a piece of bethanized wire is immersed in a beaker of sulphuric acid without being affected in the slightest degree.



Examples of Bethlehem improvements in steel products

The castings, deep-drawn sheets, strip and examples of applications of Bethalon and Bethadur (stainless steels), also parts of the Bethlehem exhibit, show some of the cases in which Bethlehem's continuous research and experiment have borne fruit in the definite improvement of various products.

BETHLEHEM STEEL COMPANY

BETHLEHEM STEEL

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the *Ultimate* in STEAM CYLINDER LUBRICANTS

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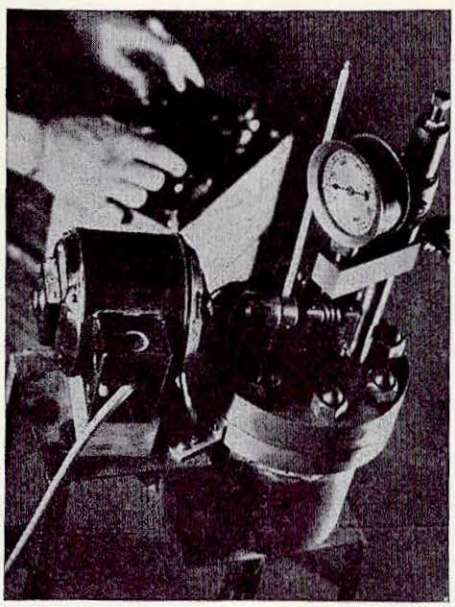
4. *Ease of separation.* GULF CRYSTAL CYLINDER OILS may be readily separated from exhaust steam or condensate. This is important where they are re-used in the plant or where the condensate is returned to the boilers.

TO MAKE BETTER STEAM CYLINDER LUBRICANTS



In Gulf's modern research laboratory the equipment shown above is used to determine the static and dynamic coefficients of friction of oils between metals in the presence of saturated or super-heated steam under high pressures. Thus, the most efficient steam cylinder lubricants can be selected for use under a wide variety of operating conditions and better lubricants developed to meet special conditions.

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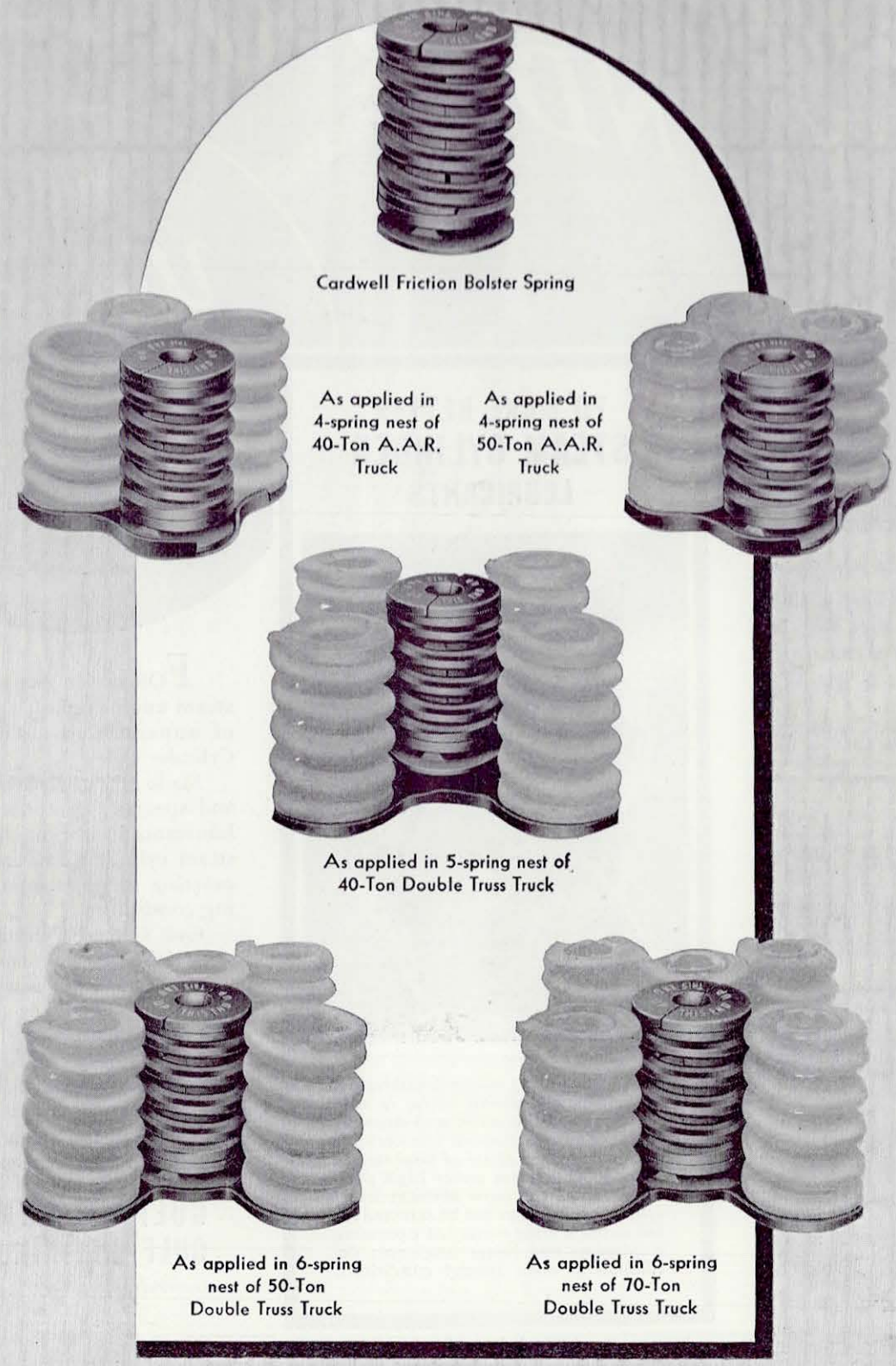
Cardwell Friction Bolster Spring
As applied in 4-spring nest of 40-Ton A.A.R. Truck
As applied in 4-spring nest of 50-Ton A.A.R. Truck
As applied in 5-spring nest of 40-Ton Double Truss Truck
As applied in 6-spring nest of 50-Ton Double Truss Truck
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CARDWELL WESTINGHOUSE CO., CHICAGO
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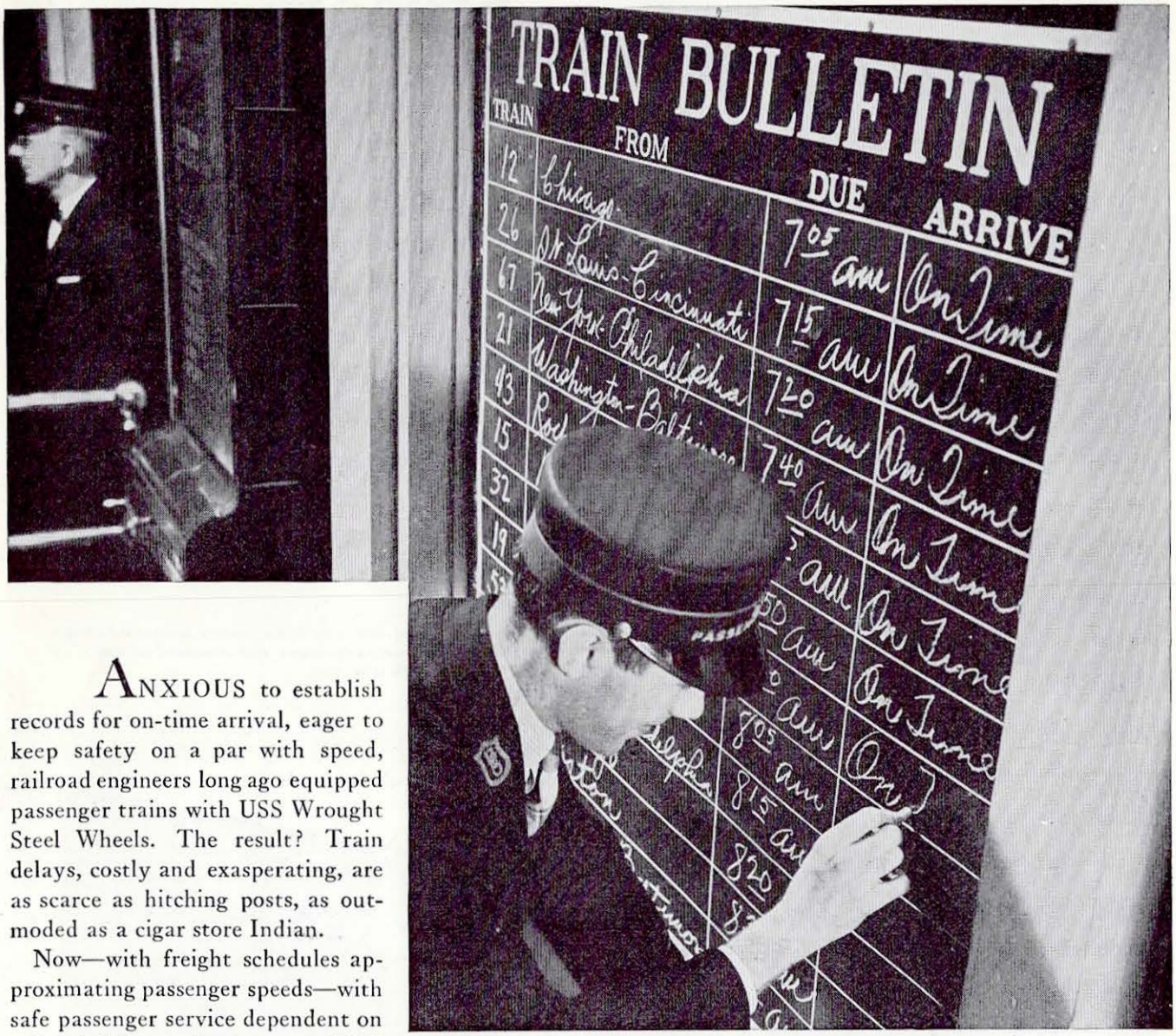
Typical of Modern Railroading



ANXIOUS to establish records for on-time arrival, eager to keep safety on a par with speed, railroad engineers long ago equipped passenger trains with USS Wrought Steel Wheels. The result? Train delays, costly and exasperating, are as scarce as hitching posts, as outmoded as a cigar store Indian.

Now—with freight schedules approximating passenger speeds—with safe passenger service dependent on safer freight performance — USS Wrought Steel Wheels are indicated for freight traffic as well. Already these superior wheels, accepted as standards of excellence for fast passenger service, have demonstrated their safety under high speeds, their stamina under heavy loads.

As you modernize freight equipment, modernize your wheels, too—modernize with the certainty that here is increased insurance against breakdown—that here is lower cost per thousand miles of service. USS Wrought Steel Wheels in freight service will give unequalled dependability, increased resistance to shock and impact, uniform resistance to braking wear, definitely longer life.

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UNITED STATES STEEL

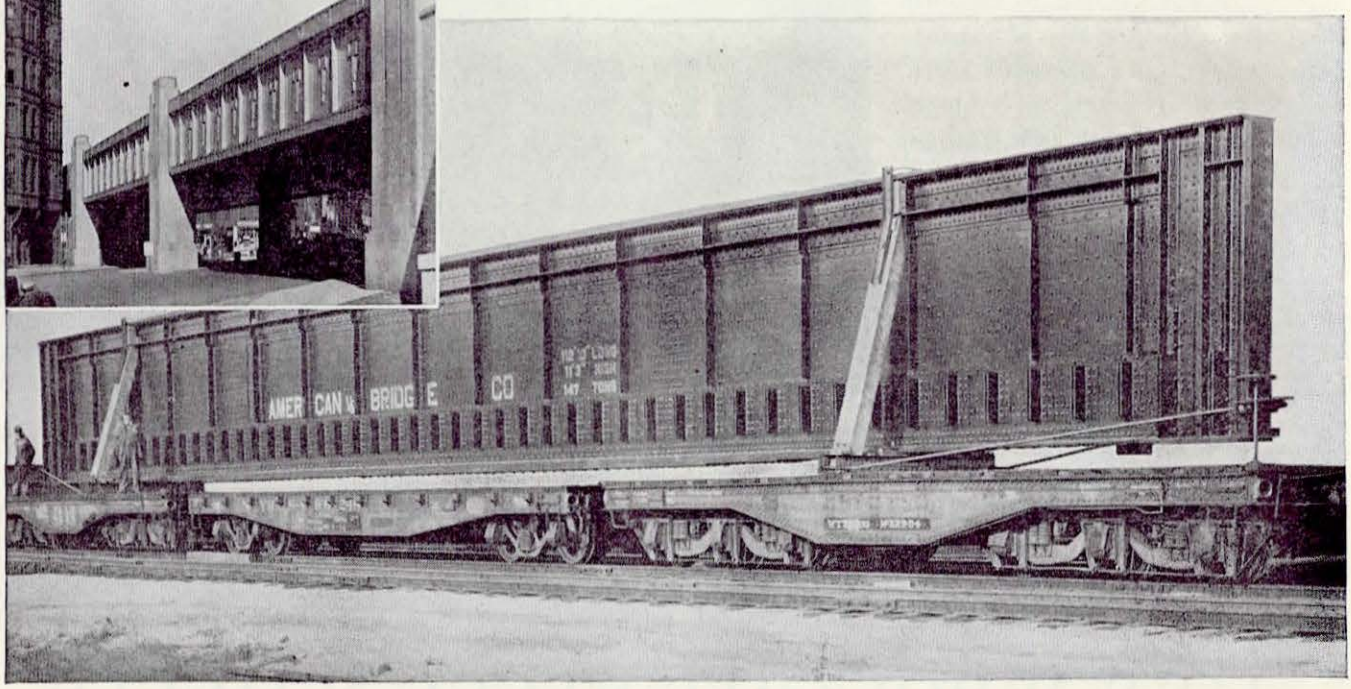
No More Trains on Syracuse Streets

Attractive ornamentation of steel with steel adds unobtrusive dignity to the girders used in many of the grade crossing eliminations in Syracuse.

FIFTY-FOUR grade crossings have been eliminated in Syracuse, N. Y. by the elevation of New York Central Railroad main line tracks passing through the city. The old two-track line at street level has given way to a new three-track structure some five miles in length.

Prominent in this work is the ornamentation of the plate girders at principal crossings, rivet-heads and flanges being shielded by decorative fascia plates and medallions.

Contract for the fabrication and erection of more than 11,000 tons of steel for this modern elevated structure was awarded to American Bridge. Plans and specifications for the work were prepared by the Railroad Company, J. W. Pfau, Chief Engineer. Walsh Construction Company was the general contractor.



One of the largest single web girders, weight 147 tons, built by the Bridge Company, leaving the Ambridge, Pa. plant for Syracuse. Contrast this inside face, rivet-heads showing, with ornamented exteriors of the girders in the other views.

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Vol. 101 October 10, 1936 No. 15

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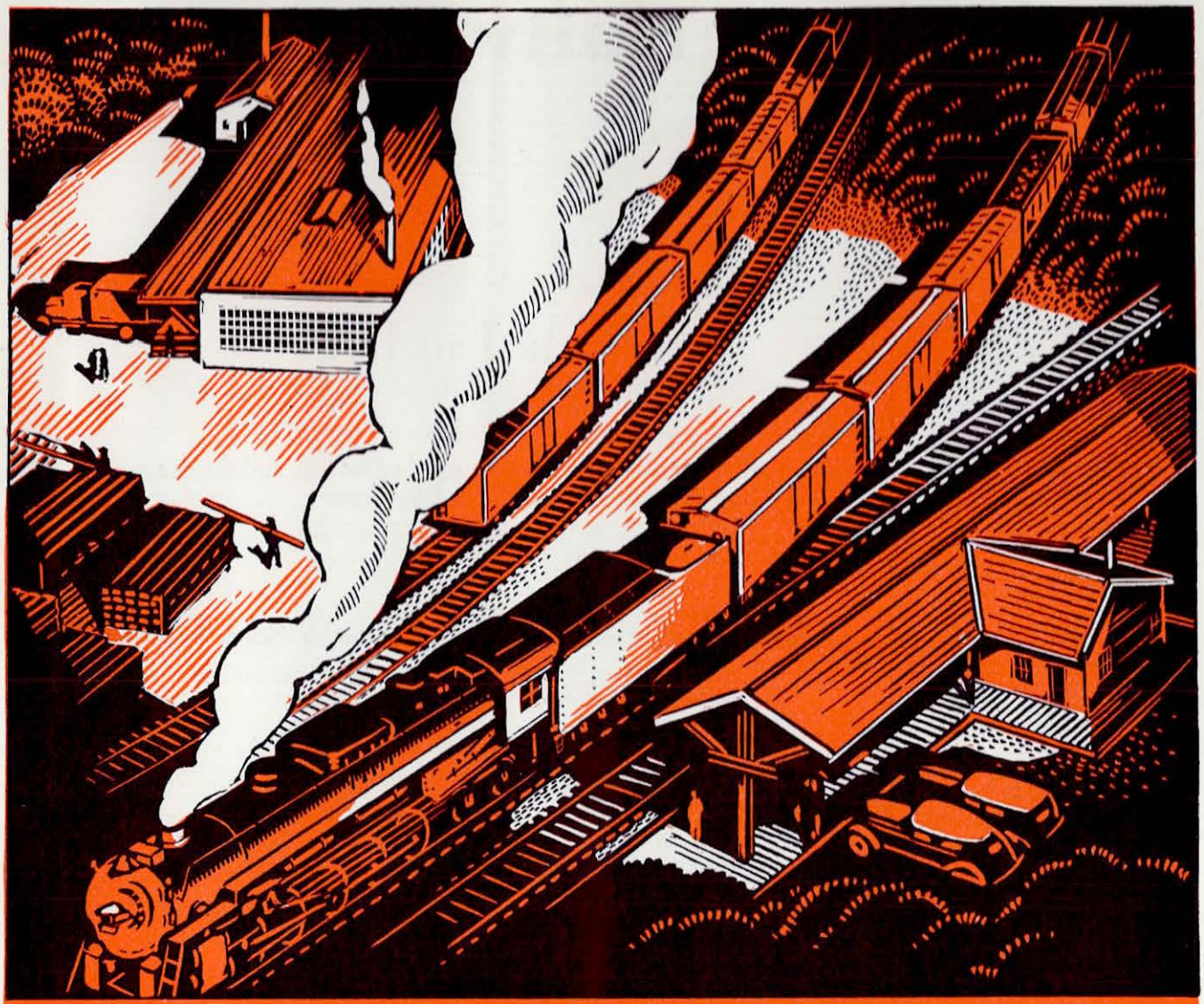

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RAILWAY AGE

Today's Great Opportunity For Far-Sighted Leadership

Years ago the writer of these lines for some months observed the operation of a small railroad shop from the inside. Most of the work was the making of running repairs to cars and locomotives in a busy and important terminal. The master mechanic on this division was a "raw hider" of the old school. The efficiency of his supervisors he judged solely by the ratio of "okays" to man-hours worked. There were then many cars with wooden draft timbers, and broken draft bolts were a constant source of trouble. The character of lading of cars with broken draft bolts made a great difference in the number of man-hours necessary to repair them. If shifting the load to get at the bolts inside the car involved much labor, and there were many such "B.O.'s," the ratio of "okays" to man-hours declined in spite of anything the car foreman could do. But that explanation carried little weight with the master mechanic. If the ratio declined the foreman was roasted with a thoroughness which all who remember the old "raw hiding" school can imagine for themselves.

Since every wrong begets another, the foreman found a way of circumventing the injustice to which he was subjected. If his ratio of "okays" to man-hours was in danger of declining, he inspected every car with broken draft bolts himself, where the load had to be shifted. If the car "would ride," a new bolt head was wedged up into the hole in place of the broken draft bolt so that no inspector would detect a defect—and an "okay" was produced in about 15 minutes. A few such "repairs" as this and the foreman's ratio was brought to a point where he would escape criticism. Bad business for the railroad, of course, but the master mechanic wanted statistics to boast about to the superintendent of motive power—so the foreman had to do his part in providing those statistics, or else . . .

Corporate Individualism Versus the Economic System

In the enginehouse a similar condition existed. The responsibility for running repairs to locomotives was shared with adjoining terminals. Here again the "okay" ratio to man-hours was used, and each repair job undertaken was done with the thought of doing only enough to get the engine over the road once, with the hope that the heavy jobs would fall to the lot, and against the record, of the other engine terminal. Bad railroading again—but the only hope of preferment, or even survival, of the responsible foreman.

Such practices have been largely eliminated on individual railroads. The lesson of the impracticability of utterly selfish striving within an organization, the success of which depends primarily on teamwork, has been gradually and painfully learned. But the process has been too gradual and too painful, and it has not been completely learned by the railroad industry as a whole, as is shown by many practices intended to further the interests of individual lines at the cost of the industry, which result in more cost to the industry than benefit to the lines responsible for the practices. Such practices, moreover, are not peculiar to the railroads. They permeate all industry.

Almost every industry—especially if it is integrated enough to be quasi-monopolistic—follows policies intended to benefit itself at the expense of other industries, largely regardless of the probable effects on the general welfare. Labor unions follow the example. They seek reductions of the working hours and advances in the hourly wages of their members with little or no consideration of the effects that will be produced upon the prices that will have to be charged for their products; upon the consuming public that will be called upon to pay these prices; or even upon the jobs of the members of the unions if the public proves unwilling or unable to pay the prices asked.

Making the System as a Whole Function

It is just as fatuous for the automotive industry or the railroads or the steel industry or any other business or the members of labor unions to seek their own profit through monopolistic practices and governmental favoritism, regardless of the effect on the economy as a whole, as it was for the master mechanic, in the instance cited above, to adopt a policy which forced his foremen to produce phoney "okays." Industries have for the most part learned this lesson insofar as their own internal workings are concerned. But they have not learned it to the extent that they will subordinate the immediate selfish interests of their respective industries to that of the national economy as a whole. The very kind of departmental selfishness and lack of teamwork which the business executive deplores and tries to chastise out of his subordinates is, often enough, the identical quality with which he approaches other businesses that are his rivals or customers.

If there is a crying need in America today it is for articulate leaders who will take the trouble to view our

economic situation *as a whole*. Not simply what policies will best subserve the immediate selfish ends of the railroad industry, the automotive industry, the steel industry, organized labor, or the farmers—but rather what balance can be struck among the aspirations of each element in our society which will *insure the optimum functioning of the economic machine as a whole.*

The Old and New Systems

Under pure competition, as set forth by the classical economists, the following by each individual of his own self-interest did secure the optimum functioning of the economic machine as a whole. But a large part of our economic structure is no longer sufficiently competitive to give validity to this principle. Where competition is modified, as it is largely owing to the size to which many corporations have grown, the pursuit of what seems to be individual self-interest has to be modified too, or controlled, if the entire economic machine is to function efficiently. Corporate ownership of the means of production necessitates teamwork instead of ruthless individualism. The railroads, being the first large corporations, have learned this lesson probably more thoroughly than any of their contemporaries, and that fact gives them the opportunity, and the responsibility, of leading the way in bringing modern industrial policy into line with present-day actualities.

The persistence of narrowly individualistic striving under economic conditions which plainly demand teamwork has brought results bordering dangerously on chaos. Lack of vision of the interdependency of our industries has led them individually to strive for advantages at the expense of others. This policy works all right in an economy of small business units, but when followed in an economic system largely consisting of huge units the whole economic mechanism comes to grief. The automotive and road-building group have enjoyed their hey-day at the expense of the railroads and railroad employees, but a large part of the bill for our highway extravagance still remains to be paid, and, if the users of the highways do not pay it, then the burden will be an old man of the sea on the necks of all taxpayers—which certainly will not conduce to a condition favorable to the sale of automobiles. The exploitation of political favoritism also carries with it the danger of a repercussion, from which the railroads suffered severely, but this is a lesson our automotive friends seem determined to learn from their own experience, rather than profiting from ours.

New Economic Standards Needed

Every wrong begets other wrongs in its wake. The working rules of employees in train and engine service seem fantastic to an outsider. Yet many of them undoubtedly had their genesis in some sharp practice instituted by some too-clever supervisory officer in the attempt to improve his own statistical record by forcing men to do work which they ought not have been called upon to do without extra pay. The astute supervisor, by improving his statistical showing at the expense of his men, thus saddled his company and his industry with burdensome rules which afflict it in meeting the competition of newer rivals, the employees of which have not learned the technique of preventing their bosses from overworking them.

Is it not as plain as a pikestaff that what we need is a rejuvenation of standards in our economic life? We have assumed for generations that the pursuit by each individual of his own interest was best for business. That was, with qualifications, true in the day of Adam Smith and John Stuart Mill. But corporate businesses have learned from bitter practical experience that it is not a safe principle to allow full rein *within* the corporation. What they have not yet learned is that, with virtually all business now in corporate form, either (1) *the restraints which pure competition formerly placed on individual greed must now be voluntarily and consciously applied* as sound business principles by corporate managements, or (2) competition will have to be fully restored, or (3) all large incorporated industries will have to submit to some such government regulation as has been applied to railroads and public utilities. What is required to avoid either (2) or (3) is a manifestation by corporate management of the same concern for our economy as a whole as these same managements now require their supervisors and department heads to show toward their business as a whole.

Free Competition, New Deal — or What?

Pure competition would prevent unemployment, although wages would have to fluctuate under it. Corporate business, if it is to survive without government regulation, must do at least as well. Pure competition maximizes production at all times even at the expense of profit. Corporate enterprise which controls productions and prices to subserve profit to the point where it destroys the power of consumers to buy, defeats its own end. No one knowing human nature can trust too much in its altruism. Hence we should probably go out of our way to foster individual private enterprise, which is self-regulating, as far as possible. But railroads and automobiles and steel and many other businesses require such aggregations of capital that the corporate form is necessary. And where this is so, let there be no question about it, teamwork has got to replace individualism, and individual selfishness must give way to policies that will keep capitalism functioning efficiently or the system will bog down—as it has bogged down since 1929.

The New Deal is mistaken in its approach to this problem. It has attempted to right the unfavorable results of untimely individualism on the part of corporate enterprise by imposing upon it government competition, government subsidies and government regulation, administered by persons who are just as selfishly individualistic as the corporate managements whose course of action they seek to modify. The Interstate Commerce Commissioner with his eye on the approaching expiration of his term is no more able to render decisions in the interest of the country as a whole than the

car foreman mentioned in our opening paragraph was able to repair cars in the interest of the railroad as a whole. The New Deal has proceeded on the assumption that the evils engendered by the short-sighted selfishness of corporate managements can be corrected by imposing upon business the equally short-sighted selfishness of a horde of bureaucrats, who, being for the most part men of meager attainments, are even less likely to see our economy as a whole than the men whose actions they seek to modify or circumvent.

Morality and Business

Morality and business are popularly supposed to have little in common. But let anyone who thinks so look back on his experience during this depression. How many companies went "in the red" to keep organizations together which, twenty years ago, would have considered such behavior, to say the least, sentimental? Our point is this—that corporate enterprises have found that a higher ethical standard is required in their own businesses, and that, without always recognizing the import of what they were doing, they have put this principle into practice. And furthermore, we believe that the recognition of this principle and the application by business and industrial management to the economy as a whole of ethical principles that have already proved their validity within their own establishments is just about all that is needed to restore prosperous functioning of the economic machine in this country—putting to rout the socialists and New Dealers, who condone mischief by seeking to get their "cut" out of it.

But these principles must be applied to the customers of every industry—that is, the public—in fixing prices as well as to its employees in fixing wages. The commonest and most destructive mistake to which the existence of industries consisting of a few large corporations leads is that of controlling prices almost regardless of their effects upon the markets for their products. Indirectly, the farmers are the largest single market for the products of the industries of this country; but this vitally important fact apparently was almost completely disregarded by most of our large industries in deciding upon their wage and price policies before and during the early years of the present depression. The disastrous political and economic effects of this practical disregard by industrial management of its most important market have been felt for seven years and may be felt for many more years. They afford conclusive evidence of the necessity for leaders of Big Business, as a matter of self-preservation, to consider what will be the long-range effects of their policies upon the entire political and economic system of the country, rather than merely what will be the temporary effects upon their own companies or industries.

There is opportunity for a Washington or a Lincoln now in American economic life which does not fall to every generation. And if such a leader is found, he will probably not arise from the ranks of politicians but rather among the "economic royalists" who direct big business.

Equipment Markets

Domestic orders reported in September issues of *Railway Age* for 24 locomotives and 3,100 freight cars brought this year's nine-months total purchases in those two categories to nearly double the volume reported for the entire 12 months of 1935. And while no domestic orders for passenger-train cars were reported last month, as was the case also in August, the 1936 purchases of this class of rolling stock were by the end of July equal to twice 1935's 12-months volume. Meanwhile rail buying also continues active, with the September orders for 30,000 tons pushing this year's business still further ahead of that placed throughout 1935.

The September orders for 24 locomotives brings this year's total to 158, excluding power units for streamlined trains. This nine-months figure compares with 83 locomotives ordered throughout 1935. Fourteen of the locomotives ordered in September were steam and 10 were Diesels. Thus far in 1936 a total of 122 steam locomotives has been ordered—a figure which equals the combined total of 122 steam locomotives ordered during the four previous years, 1932 to 1935. There were, of course, orders for locomotives other than steam in these four previous years, but in only one of them—1934 with its 183—has the total orders for locomotives of all types exceeded this year's nine-months figure of 158. In addition, there were ordered in September five locomotives for export and there were outstanding on October 1 inquiries for 67 for domestic service and 13 for export; also, plans were pending for the purchase of three others for domestic service.

Thus far in 1936 a total of 37,354 freight cars has been ordered for domestic service. This is but 44 cars short of being double the business of 1935's 12 months when domestic orders for 18,699 freight cars were placed. Furthermore, this year's business in the freight car field, having passed at the half-year the total for the entire 12 months of any year since 1930, is now in nine months equal to 80 per cent of that year's total. Then there are this year's export orders for 516 freight cars, a larger export volume than that reported for the entire 12 months of any year since 1930, save 1934. At the close of last month inquiries were outstanding for 1,300 freight cars for domestic service and 1,100 for export.

The situation in the passenger-train car field, as stated at the outset, remains the same as last month. Thus far in 1936 a total of 141 cars of this type has been ordered, exclusive of articulated units for streamlined trains. This, as pointed out in the *Railway Age* of August 8, is more than twice the 63 passenger-train cars ordered throughout 1935, and is larger than the total for the entire 12 months of any year since 1930, except 1934 when 388 passenger-train cars were ordered. Domestic inquiries for 12 passenger-train cars were outstanding on October 1.

The 30,000 tons of rail ordered in September brings the year's total to date to 552,585 tons—more than 57,000 tons in excess of 1935's total of 495,300 tons.

New York Central Completes Gra Project Within

Track elevation over new 5-mile 1,500,000 cu. yd. of embank crossings. New passenger fac

Operation Through Washington Street is at an End

THE inauguration of high-level service on September 24 marked the substantial completion of the extensive grade crossing elimination project of the New York Central in Syracuse, N. Y., involving the removal of all main-line train operation from city streets, with the elimination of 62 main-line grade crossings. In addition, the project involved the construction of new passenger station facilities, including a modern passenger station with 10 through passenger station tracks, together with a separate mail and service building, an express building, and a passenger car facilities building.

The key to the plan for the elimination of grade crossings in Syracuse, which represents one of the largest and most important projects of its kind in recent years, was the abandonment of the double-track passenger main line through Washington street, a main business street of the city, and the consolidation of this line with the double-track main line of the West Shore railroad, a leased line of the Central, into a three-track line which has been elevated through the city over a distance of approximately 5 miles.

The project, which is now substantially complete, has involved approximately 1,500,000 cu. yd. of embankment, the construction of 27 railroad bridges and 3 highway bridges, and the complete signaling of the new main tracks, including three new interlocking stations. The bridges, all of which are of steel, are unusually attractive in appearance. Two of them, designed to meet special conditions, employ long plate girders constructed of nickel steel.

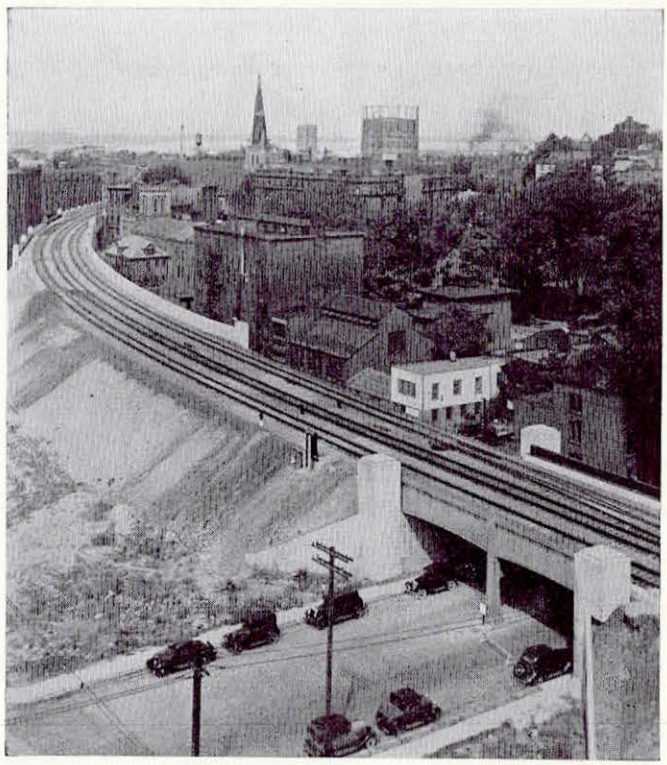
Operation in Streets a Real Problem

The grade crossing situation within Syracuse, a city of about 210,000 population, has for many years constituted a problem for the railroad and for the city. This was primarily because of the extensive mileage of main-line tracks directly within business streets. The different lines of the road within the city prior to the present project included the double-track passenger main line, the double-track main line of the West Shore railroad, the Syracuse Junction branch, the Watertown branch, the Chenango branch, the Auburn branch, and two shorter

The New Passenger Station, Faced with Brick and Limestone, Fronts on a Wide Boulevard

de Separation and Passenger Station City of Syracuse

route, involving 30 bridges and
ment, eliminates 62 main-line
ilities adequate and attractive



Looking West Over a Section of the Elevated Tracks

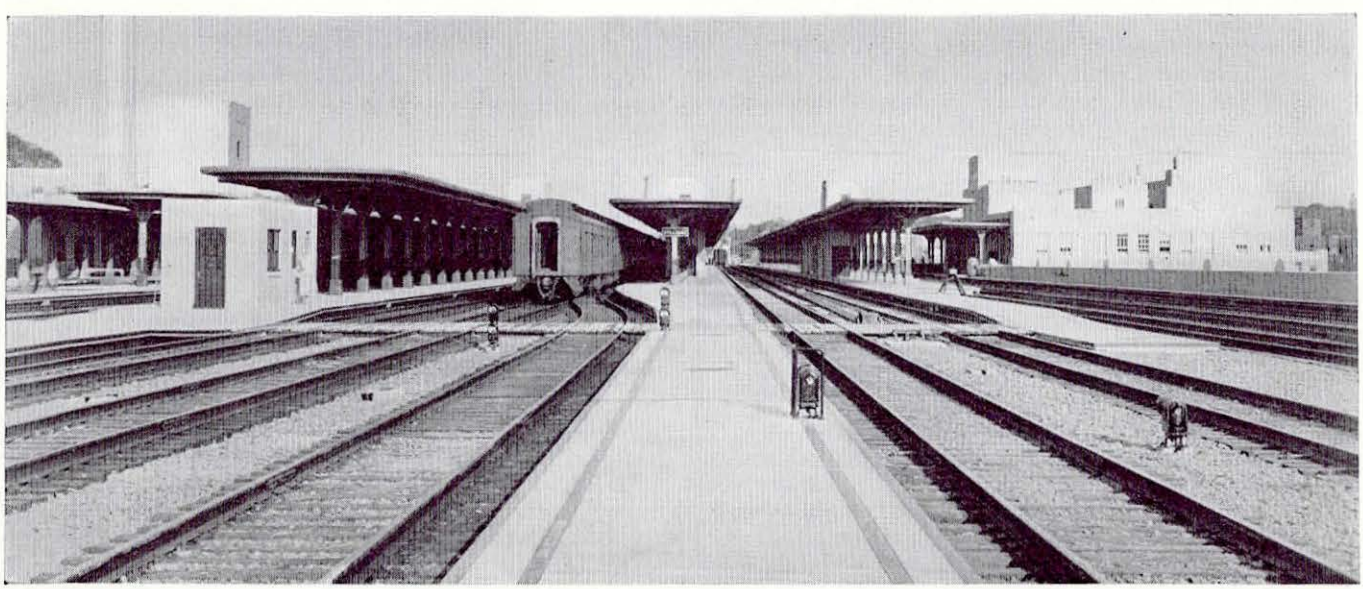
industrial branches, in addition to several yards and a large number of sidings and team tracks.

Until the inauguration of high-level operation through Syracuse, the passenger main line entered the city from the east on its own right-of-way and passed in a general westerly direction through the main business section, occupying Washington street for a distance of approximately 1.4 miles. This line carried all through passenger traffic into and out of the city, in addition to a considerable number of branch-line and local freight movements, involving a total of approximately 100 trains every 24 hours.

In their approach to and location in Washington street, the main line tracks crossed 18 north and south streets at grade, including several of the most important thoroughfares in the city. The old passenger station, a stone-faced structure served by a large train shed, built in 1895, was located at South Franklin street, at the west end of the main line occupation of Washington street. West of the station, the main line, with supporting coach and freight yards, occupied a private right-of-way to the west city limits, but within this territory crossed three additional streets at grade.

The West Shore main line, occupying its own right-of-way, practically paralleled the main line of the Central about four blocks north. This line, prior to the present track elevation work, crossed 29 streets within a distance of 5 miles. Its most important grade crossings within the heart of the city were at North State, James and North Salina streets, the latter two carrying street car tracks. All through freight of the Central and the West Shore has for a number of years been carried around Syracuse to the north over the Syracuse branch, which extends from the DeWitt classification yard at East Syracuse to the main line at Syracuse Junction, at the west end of the city, a distance of approximately eight miles.

In addition to the main-line grade crossings within Syracuse, branch lines of the Central occupied city streets for several miles and involved a large number of grade crossings. Details of the locations and routes of these



Looking East Toward the Track and Platform Layout at the New Passenger Station

branches and the manner in which they were treated in the grade separation project to eliminate a large amount of the trackage in the streets, and to confine that trackage still in the streets to local industrial switching, were presented in the *Railway Age* of April 23, 1934, at the time the project was getting under way.

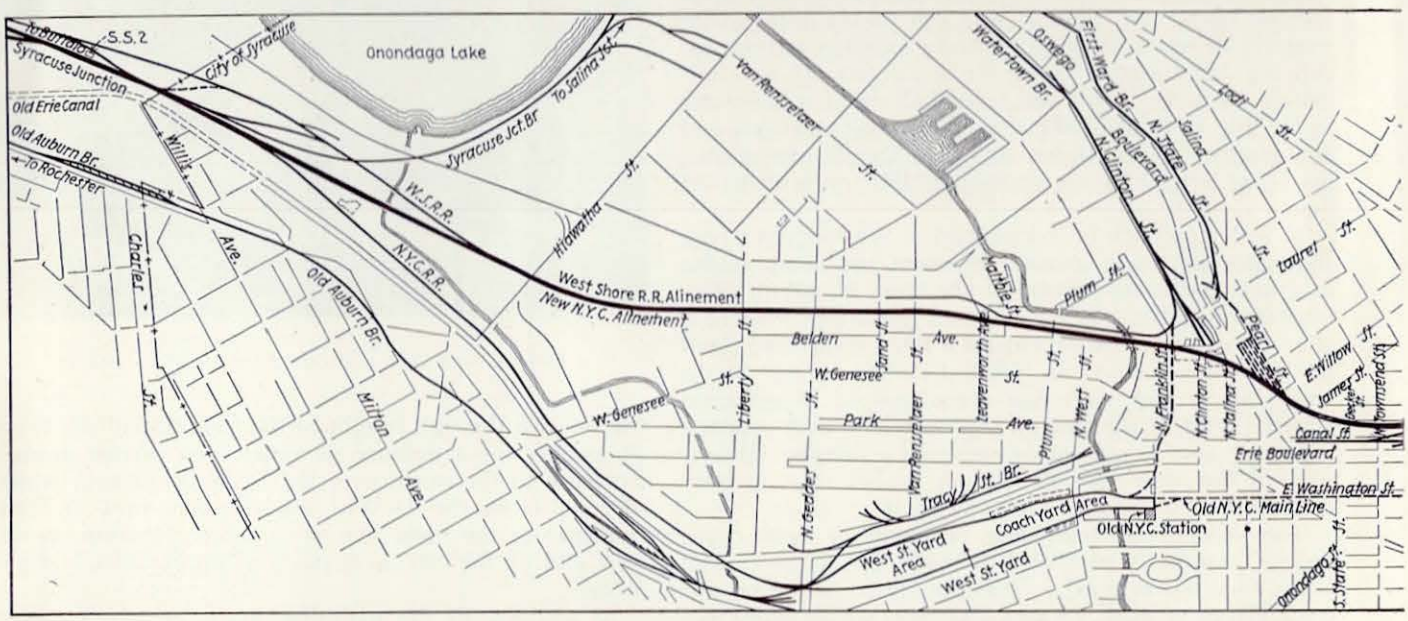
Long, High, Three-Track Embankment

In the changes which have been made, all New York Central traffic which moved through Washington street has now been diverted to the new elevated line through two connections; the easterly one located between Midler avenue and Peat street, and the westerly one west of Hiawatha street. The rise in the track grade at the east end of the work begins at practically the east end of the new east end connection, the initial rise being on a 0.3 per cent grade, which extends through a distance of approximately 3,700 ft. to a point where the elevated tracks are approximately 12 ft. above the old level of the West Shore tracks. Immediately west of this point, the high-level tracks continue on a level grade for about 1,600 ft., beyond which, for about 3,000 ft. they drop on a 0.10 per cent grade to the west and then continue on a level grade for a distance of about 2,600 ft. Within this latter stretch of level track, approximately 20 ft. above the level of the former tracks, are located the new station facilities, including 10 through tracks and 5 canopy-covered platforms.

West of the station layout, the main through tracks rise on a 0.15 per cent grade to the west for a distance of about 1,500 ft., and then descend on a 0.3 per cent compensated grade to the level of the existing New York Central main tracks at Syracuse Junction. Curvature on the elevated line was limited to two degrees, except directly within the heart of the city, where, in order to avoid excessive property damage, curvature slightly in excess of three degrees was necessary.

The elevated tracks throughout are supported on earth embankment between streets, with natural side slopes except at certain points where the restricted width of right-of-way made it necessary to construct retaining walls. Through the main portion of the elevation, the tracks are, in general, from 20 to 22 ft. above the present track level, reaching a maximum of approximately 27 ft. in the vicinity of Plum street. Owing to the fact that the original West Shore tracks were on a fill for a considerable distance in the west half of the city, the new three-track fill is considerably higher than the difference in track elevations would indicate, reaching a maximum height of about 40 ft. in the vicinity of Liberty street.

Of the 29 streets affected by the track change, all but 5 were at grade. These latter streets passed beneath the West Shore in relatively narrow underpasses. In 1930, one of these streets, Thompson road, was shifted to the west and carried on a viaduct approximately 1,650 ft. long over both the New York Central tracks and the West Shore tracks. At about the same time, a grade crossing at Nichols avenue and the West Shore, in the eastern part of the city, was eliminated by closing it and extending Midler avenue over the tracks on a steel structure. The underpasses carrying the other four streets have since been completely rebuilt. Eighteen of the other streets previously crossed at grade, and one additional street opened, are now spanned by steel bridges supported on concrete abutments, so that there does not remain a single grade crossing on the Central's main line within the city.



General Plan of the New York Central and West Shore Tracks Within

Unusual Grading Methods

The first stage in the project involved the building of the embankment, together with the construction of the bridge abutments and certain retaining walls. This work was begun early in 1934, while all West Shore traffic was diverted to the New York Central tracks in Washington street or over the Syracuse Junction branch. The grading, which involved the placement of approximately 1,500,000 cu. yd. of fill, largely sand and gravel, was handled largely with side-dump cars, draglines and cranes, in some respects in an unusual manner, because of local conditions and to avoid interference with the bridge masonry construction going forward at the same time at so many locations.

All of the filling material was secured from a 62-acre level gravel pit located along the West Shore about 9 miles east of the city, where the contractor, employing three gasoline or Diesel-powered crawler-mounted dragline excavators with 2½- or 3½-yd. buckets, excavated to a depth of approximately 40 ft. below the ground and 25 ft. below water level in the pit. All material was loaded into and transported to the fill in 40- to 50-

car trains of 16-yd. side-dump cars, three such trains being kept in almost constant operation during the working season.

To avoid the large expense which would have been involved in building 4 to 4½ miles of temporary trestle to construct the fill between street bridges, other means of building the fill were employed. Throughout the eastern part of the city, west to Sand street, except for that section between State street and Onondaga creek, a material delivery track was constructed along the south side of the right-of-way, outside the limits of the bridge abutments which were being constructed at the different streets. Then, immediately along the north side of this track, draglines excavated a trench 10 to 12 ft. wide and 6 ft. deep, which formed a dumping pit for the material trains.

As material was dumped into the trench, it was rehandled by crawler-mounted draglines or cranes to build a one-track fill at final elevation toward the north side of the right-of-way, joining the adjacent newly constructed street bridges. After this was completed, along with sufficient of each of the bridges to permit at least single-track operation, all subsequent widening for the three or more track fill was effected from the top of the initial fill, dumping directly from the cars.

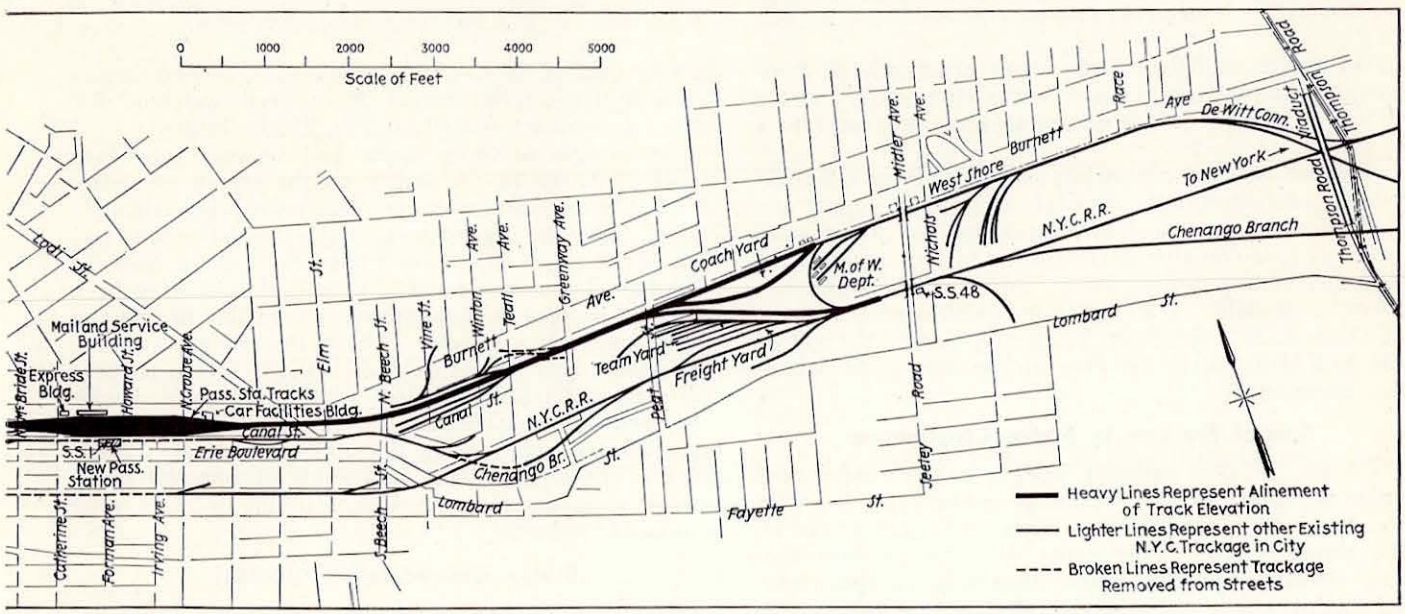
Within the restricted area between State street and Onondaga creek, in the center of the city, where the fill was confined by retaining walls, sufficient material for one track at final elevation was trucked into position by motor trucks, operating over a dirt ramp extending up to the east end of the State Street bridge. When the single-track fill had been built progressively westward to Onondaga creek, and the track laid, the full section of fill was made by dumping direct from cars.

In the western part of the city, in the sections between Hiawatha, Liberty, North Geddes and Sand streets, where the existing tracks were already on a two-track embankment from 10 to 20 ft. in height, a somewhat different method of construction was adopted. Here, to avoid interference with the work on the new bridges, construction trestles were built across all of the streets, outside the limits of the new bridge work, with approaches connecting back to the existing sections of fill between the streets.

Operating over these trestles and thence over one of the old tracks shifted close to one side of the existing embankment, trainloads of filling material were dumped down the slope of the embankment, widening it out at the existing level to the full width of the final fill. Then, as additional material was dumped, it was picked up by draglines or cranes and cast toward the opposite side of the right-of-way in a plan to build a single-track fill at final sub-grade elevation. Upon the completion of this single-track fill, widening out to final width was done direct from cars operating on the high level.

Large-Scale Masonry Work

With approximately 120,000 cu. yd. of concrete to place in bridge abutments, footings and retaining walls, the masonry work assumed large importance. Washed sand and gravel of high quality were secured from the same pit as the embankment material; cement was received in bulk in box cars; and practically all of the concrete for the entire job was batched in a single large central plant located near the site of the new passenger station and was delivered to the various structures in a fleet of five four-yard truck mixers. With this equipment, which provided a wide range of flexibility, in excess of 1,100 cu. yd. of concrete were delivered to a half dozen or more locations daily in two eight-hour shifts.



Syracuse, N. Y.—Heavy Lines Show Alinement of the Elevated Tracks

Subsoil conditions throughout the length of the track elevation work, varying from limestone and shale to a soft silt material extending to a depth of 110 ft. or more, necessitated special consideration to bridge abutment footings, and, in some cases, to the design of the abutment itself. Wherever rock or hard-pan were encountered relatively near the surface, mass-type abutments without piles were employed, whereas in the softer materials, all foundations were placed on concrete or timber piles.

At several locations the vertical concrete or timber piles were supplemented with creosoted timber batter piles because of the very soft material overlying the hard bottom. At Hiawatha, Liberty, North Geddes and Sand streets, where subsoil conditions were particularly unfavorable, and where the height of fill varies from 30 to 40 ft., abutments of the cellular type were employed, with spread footings supported on concrete piles. Through this design, the weight of the abutments them-

The Bridges Within the Main Business District are Particularly Attractive—The State Street Structure is Shown Above

selves was spread over large areas, practically all horizontal thrust on the abutments was eliminated, and the weight of the fill in the abutment areas was kept to a minimum.

The cellular-type abutments employed have a heavily reinforced footing slab, approximately 50 ft. square and 4 ft. thick, a bearing wall supporting the bridge span which is approximately 6 ft. thick, and four longitudinal load-distributing walls, 30 in. thick, which support a 27-in. deck slab. A 30-in. curtain wall across the rear of the box, to a depth of 10 ft. 6 in. below the top of the deck slab, lowers the slope and volume of fill within the abutment.

Special Features in Bridge Construction

Of the 27 steel railroad bridges constructed in the projects, 12 are of the deck plate girder type, 9 are of the longitudinal wide-flange beam type, and 6 are of the through plate girder type. Of the 25 structures over streets, 13 employ single spans between abutments, 10 employ center-of-the-street columns, 1 employs curb columns, and another both curb and center columns. Special features of these bridges as a whole are that they are painted with aluminum paint, while the exposed steelwork in those structures in the main business district is specially ornamented to give it a pleasing appearance. From a structural standpoint, the most interesting features of the bridges are the extensive use made of large-section wide-flange beams, and the employment of nickel steel in the girders of two of the longer spans.

The five most interesting and attractive bridges are at North State, James, East Willow and North Salina streets, and at Oswego boulevard, all of which are three-track through plate girder structures, with or without center-of-the-street columns, and with the greatest amount of ornamentation. The structures at James and Salina streets are similar and involve the longest clear spans in the project, namely, 107 ft. and 109 ft., respectively.

In the case of all five of these bridges, the width of the right-of-way was so limited by adjacent buildings that it was impossible to use intermediate girders. Therefore, transverse floor beams, carrying three tracks, were spanned between two main girders. This resulted in very heavy floor beams and girders. The girders at James and North Salina streets, where the longest spans were required, were constructed of nickel steel, using a basic unit stress of 27,000 lb. per sq. in., and have an over-all depth of 11 ft. 3½ in. The floor beams are wide-flange rolled beams, 36 in. deep, weighing 300 lb. per ft., and are spaced on 2-ft. 2½-in. centers.

The bridges at State street and Oswego boulevard employ columns in the center of the street, the State street structure involving two clear spans approximately 78 ft. long, and the Oswego boulevard structure two clear spans of 71 ft. Except for this feature, and the fact that girders of ordinary structural steel have been used, the bridges at these streets are similar to those at James and Salina streets. All of the bridges at these five streets have ⅝-in. steel deck plates which support rock ballasted tracks, the deck plate being covered with a concrete sub-base and three-ply membrane waterproofing, protected on top by a course of 1¼-in. asphalt plank. The asphalt plank was made to a special specification requiring that the filler material be entirely of a mineral character.

Bridge Ornamentation Unusual

Ornamentation of these five bridges is the same, involving essentially the uniform vertical panelling of the girder web plates, with an ornamental medallion in each panel, and the encasing and shielding of both the upper and lower flange assemblies. In the case of the upper flanges, the shield takes the form of a series of panelled ornamented steel plates, producing the aspect of a coping or parapet. In addition to the special treatment given to the steelwork at these bridges, the abutments and flanking pylons at these structures are faced with cast stone. All of the bridges in the project are finished with two coats of aluminum paint over a shop coat of red lead.

While the most thought and expense were obviously spent in enhancing the appearance of the five more important bridges directly in the main business district, all of the other street bridges, of both the deck-plate girder and longitudinal I-beam types, were made attractive through the use of ornamented columns and facia girders with arched lower flanges. The largest railway bridges in the project, from the standpoint of the number of tracks carried, are those over North Crouse avenue and Catherine street, at opposite ends of the new passenger station layout, both of which carry 12 tracks and one or more turnouts. These structures are of the longitudinal I-beam, steel-plate-deck type, with a line of columns longitudinally through the center of the street.

In addition to the railroad bridges constructed over streets, a three-track main-line bridge and a single-track industrial line bridge were constructed over Onondaga creek; one long highway bridge was constructed to carry Thompson road over the tracks, and two highway bridges were built to carry Midler avenue over the tracks. The main-line bridge over Onondaga creek includes a main span of 74 ft. 6 in., a tower span of 25 ft., and two approach spans, one 85 ft. long and the other 45 ft. 5 in. long. This structure is of the longitudinal girder type throughout, with a concrete slab deck.

The highway bridges carrying Thompson road and Midler avenue are steel structures, with concrete decks, the bridge carrying Thompson road, with its viaduct approaches, being approximately 1,650 ft. long and approximately 50 ft. above the tracks. The Midler Avenue bridge over the New York Central tracks has a center or main span of 88 ft. 6 in., flanked on each end by a 45-ft. approach span, while the Midler Avenue bridge over the West Shore tracks has one span 117 ft. 6 in. long and two flanking spans 41 ft. 6 in. long.

Attractive New Station

The station is located on the south side of the tracks between Catherine street and North Crouse avenue, about three-quarters of a mile east of the old station at Franklin street, on a site much more open and attractive than that of the old station and more generally accessible from all sections of the city. The building is at the street level, about 20 ft. below the level of the tracks, and faces Erie boulevard, an existing paved street 80 ft. wide constructed over the bed of the old Erie canal.

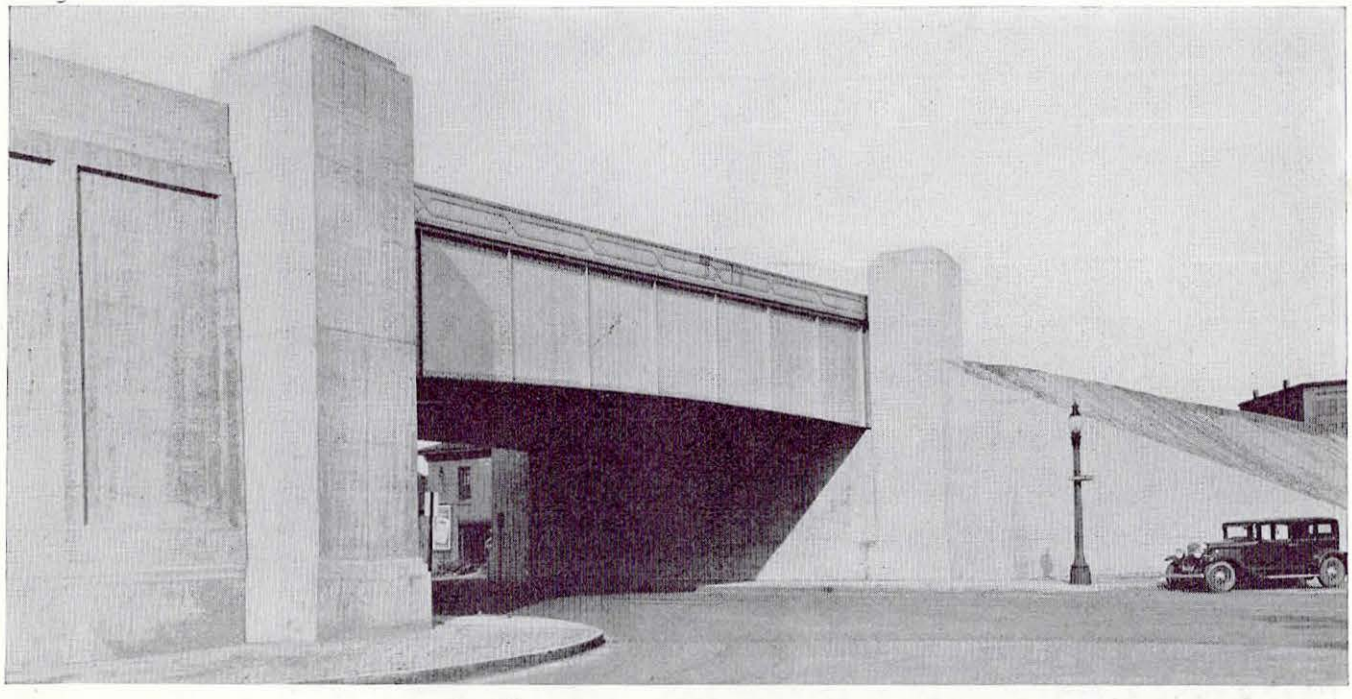
The station structure, which occupies an area approximately 163 ft. long by 100 ft. deep, reflects the modern trend in architecture and consists of an impressive central section, four stories high, with tower set-backs at the top, flanked by three-story wings. The building has a structural steel frame, and the central section is faced with limestone, while the wings are faced with brick in a range of gray-buff color. A three-foot base course of polished granite surrounds the entire structure, and limestone trim, copings and belt courses carried around the wings tie them harmoniously into the center section.

The predominating lines of the structure are vertical, produced largely by the tower-like lines of the central section, the front face of which is given over largely to a main entrance facade in glass, above a marquis sheltering a group of four entrance doors. Lending a pleasing modern touch to the exterior is the use of structural aluminum for all window frames and spandrels, for doors and door frames, and for the entire facing of the main entrance marquis, as well as that of a smaller marquis over a secondary entrance and exit on the west side of the west wing.

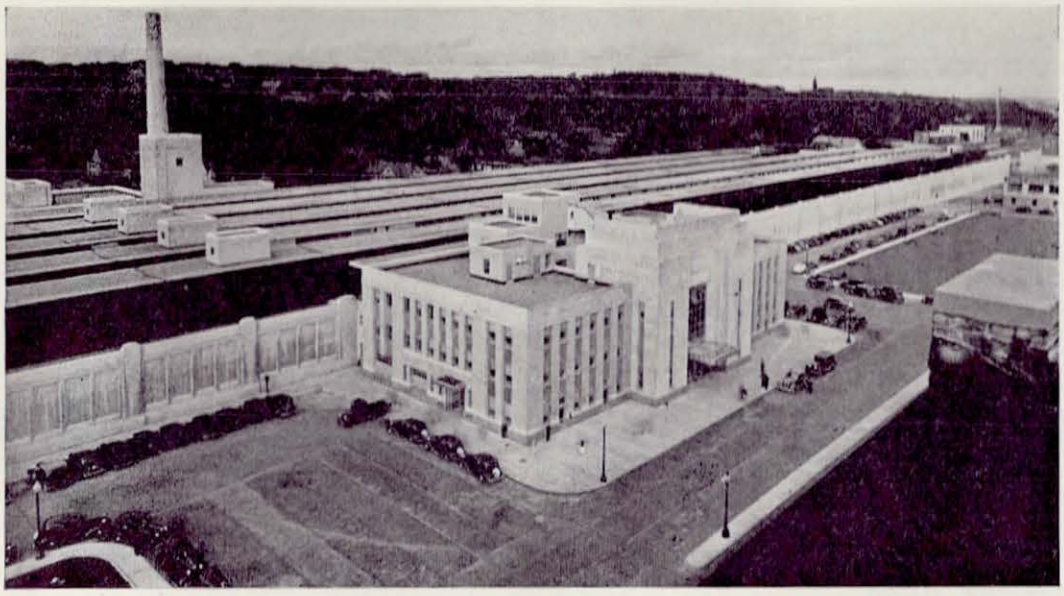
Interior Pleasing

The central section of the station is given over to a general concourse and waiting room approximately 58 ft. wide by 78 ft. deep, which is immediately surrounded by passenger service facilities such as ticket offices, a restaurant, newsstands, parcel and baggage checking counters, telephone and telegraph facilities, and toilet and wash rooms. The floor within this main area, which is at practically the street level, is of buff terrazzo, with a black marble border and base. The ceiling, 24 ft. above the floor, is of the coffered type in pre-cast acoustical plaster, finished in various tones of brown and tan, and the side walls are of rose-tan Montana travertine, surmounted by a 24-in. decorative frieze done in acoustical material, finished to harmonize with the color predominating in the ceiling. All doors, frames, counters, grills and miscellaneous trim throughout the waiting room are of satin-finish aluminum, as are also the flush-type electric lighting fixtures which are arranged in the ceiling in panel formation, and the special concealed lighting fixtures over such facilities as the ticket windows, baggage counter and the train bulletin board. A feature of the waiting room is its lounge-like informal atmosphere, produced by the substitution of tables and leather-upholstered seats and settees scattered about on rug-covered areas, for the usual type of waiting room furnishings.

The lunch room, which occupies an area 50 ft. long and 20 ft. deep along the front of the east wing, is in



The Bridge at Franklin Street is Typical of Many of the Structures Outside of the Main Business District



Looking Northeast Over the New Passenger Station and Its Extensive Elevated Track and Platform Layout

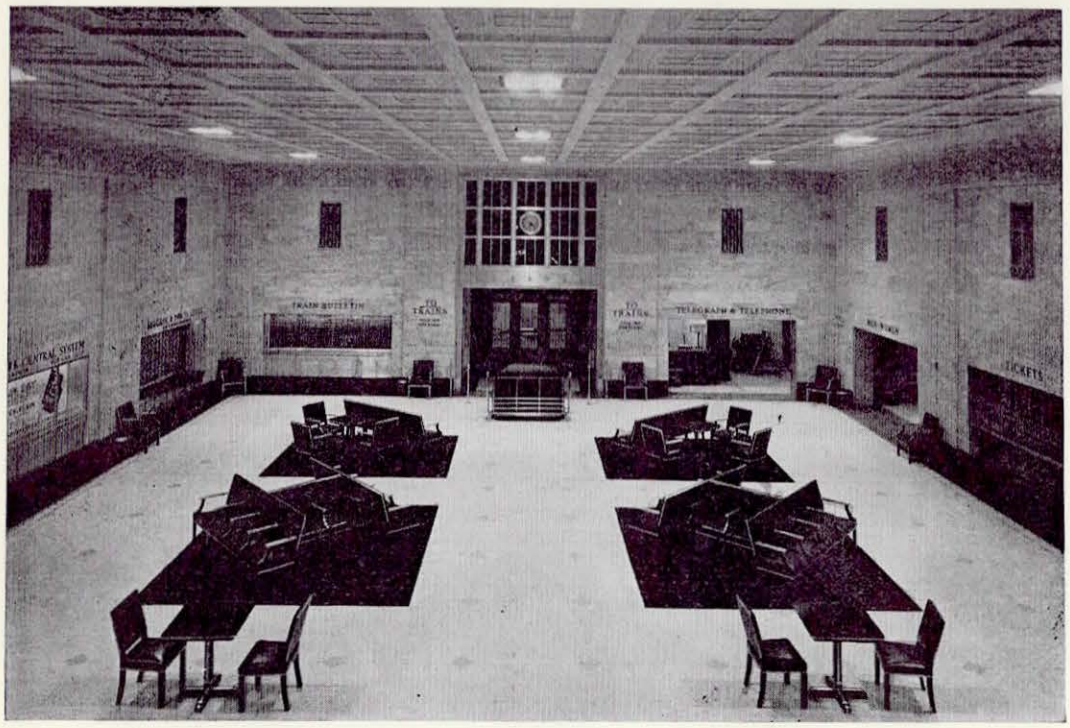
direct connection with the waiting room. The service facilities here include a long, low-type, marble-top counter with 22 leather-upholstered stools, and a series of tables and chairs along the front windowed face of the room. All serving facilities behind the counter are modern in every respect and are of aluminum or Monel metal. The kitchen facilities are located directly back of the lunch room.

The basement of the station, which extends under the entire building, is used largely for storage, locker space, and for housing mechanical facilities. The upper stories of the station are finished as a modern office building and are given over almost entirely to offices for the various local departments, and for housing local service facilities such as telephone switchboards, heating system fans and switch and signal control equipment. The latter facilities are located at the rear of the central section of the station, on the fourth floor, in a penthouse enclosed on three sides by windows, which is used as a signal station for controlling track switches and signals in the immediate vicinity of the station.

Heating of the main passenger areas of the building is by hot air passed over steam coils supplied with steam from a heating plant located in the mail and service building directly back of the station on the north side of the tracks. Fans employed in the heating system are located on the mezzanine floor. These fans draw fresh air from louvred openings in the exterior walls and deliver it to heater rooms on the second floor of the station, front and rear, and thence through aluminum louvred grills in the walls of the concourse and waiting room. All heating of the smaller confined areas of the station proper, as well as of the office areas, is by direct radiation.

Effective Track Layout

The track layout at the station includes ten main passenger tracks, served by four low-level island platforms, a narrow service platform, and a mail and express platform. All of the platforms are of reinforced concrete construction, supported on concrete piles. The passenger platforms are from 1,450 ft. to 2,050 ft. long, and

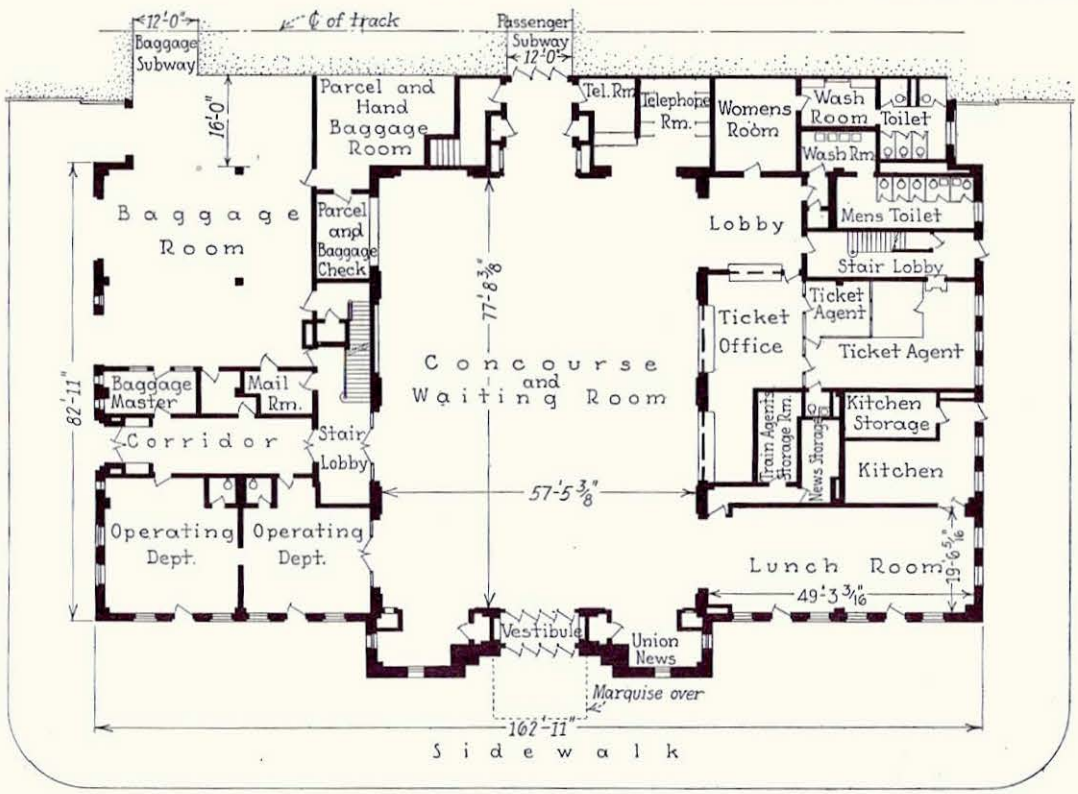


The Concourse and Waiting Room is Fitted With Leather Upholstered Chairs and Settees Scattered About on Rug-Covered Areas

for the greater part of their length are 22 ft. wide and covered with steel-frame butterfly-type canopies, 26 ft. wide. The canopies have concrete tile roofs, weatherproofed with three-ply, built-up roofing.

The entire station track layout is supported on earth fill between street bridges, the fill in this area along both sides being for the most part retained by concrete retaining walls. On the south side, the wall flanking both sides of the passenger station extends from a point east of North Crouse avenue to a point west of Catherine street, a total distance of approximately 1,900 ft., while on the north side, the wall, approximately 600 ft. long, affords the necessary room for the mail, service and express facilities.

Access to the station platforms for passengers is by means of pairs of enclosed stairways, leading each way from a passenger subway, 12 ft. wide, which extends directly from the north end of the station concourse and waiting room, approximately 270 ft. to an exit on Burnet avenue on the north side of the tracks. The passenger subway, which is at practically the same level throughout as the concourse and waiting room, is of reinforced concrete box construction, with painted interior walls and ceiling.



General Plan of the First Floor of the New Station, Showing the Locations of the Various Passenger Facilities

The station platforms serve for handling mail, baggage and express, as well as for the handling of passengers, exit for baggage trucks being afforded by electrically-operated elevators, one of which serves each platform. These elevators operate down to a baggage subway beneath the track level, which extends from the baggage room in the west wing of the passenger station directly into the mail and service building on the north side of the tracks. The baggage subway, like the passenger subway, is of reinforced concrete box construction, and is 12 ft. wide.

All of the station tracks are stone ballasted throughout, both on the fill sections and over the different underpasses. The track structure itself is of the standard type of construction employed on the Central.

In order to facilitate switching movements and the changing of locomotives, the station tracks are largely connected in pairs, and crossovers at both ends of the station layout make it possible to use any of the tracks in either direction. Furthermore, in addition to the main tracks at the station, short tracks, stubbed at the ends of the platforms, or connected back into the main tracks to form short sidings, are provided for the purpose of holding locomotives, coaches, diners, sleeping cars or other equipment to be added to or set out of trains.

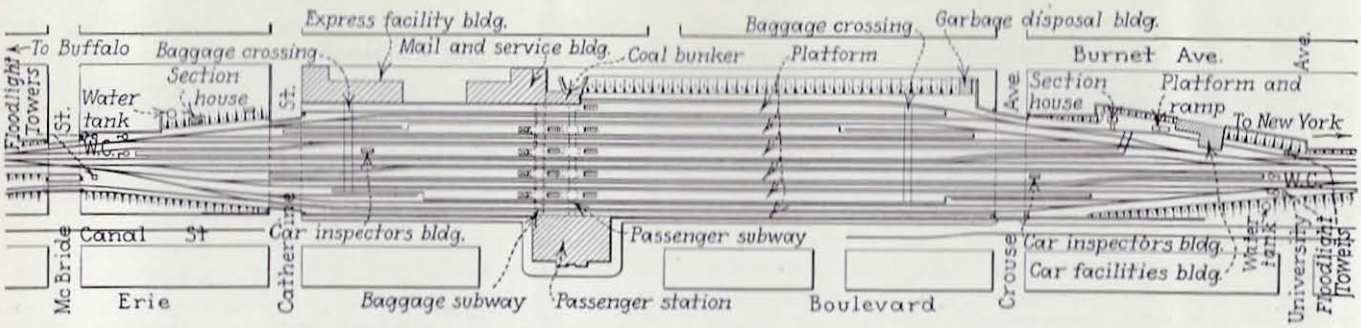
One other track within the station layout lies along the north side of the main passenger tracks and, while essentially a passenger track for the use of local trains, or for holding mail and express cars or other equipment temporarily, is used also as a coal delivery track for the station heating plant within the mail and service building. This track is flanked on one side by the most northerly passenger platform and is stubbed within the service building.

At each end of the station platform facilities are located water columns and a small brick car inspectors' building. The car inspectors' buildings each afford an office, and storage space for oil and journal box packing and for other materials and supplies required by the car inspectors.

Four 100-ft. floodlight towers, two at each end of the station track area, each equipped with a battery of three main projectors fitted with 1500-watt lamps, illuminate the entire station track and platform layout for night operation. The projectors are equipped with special lenses to confine the lighting within the side limits of the station tracks, and are directed downward to insure adequate illumination of the uncovered narrower ends of the platforms where any form of platform lighting standards would have interfered with the handling of passengers and baggage, mail and express. An additional 500-watt projector on each of the towers at the east end, directed abruptly downward at the locomotive water columns at this end, facilitate the taking on of water at night.

New Interlocking Facilities

As a part of the construction of the new elevated route through Syracuse, three interlockings and inter-



General Plan of the Track and Platform Layout at the New Station, Showing the Locations of the Various New Buildings

mediate automatic signals were provided. At Syracuse Junction, where the new elevated line connects with the main line, a new 63-lever electric interlocking, Signal Station No. 2, was constructed. At the east end of the new line, a 24-lever mechanical interlocking was installed, in what is called Signal Station No. 48. A new electric interlocking, Signal Station No. 1, was installed to handle the switches and signals in the area of the passenger station, the control room forming a penthouse on the track side of the station building.

This plant at the station includes some of the most modern apparatus in the interlocking field, a feature being the C. T. C.-type control machine employed, in which the locking is effected by the interconnection of circuits rather than by mechanical locking between levers. This new type of interlocking permits the use of miniature-type levers mounted on a desk panel, so arranged that the operator can reach any lever without leaving his chair. It further expedites changes of routes because the levers need not be operated in a particular sequence, and there is no delay waiting for indications for release of lever locks.

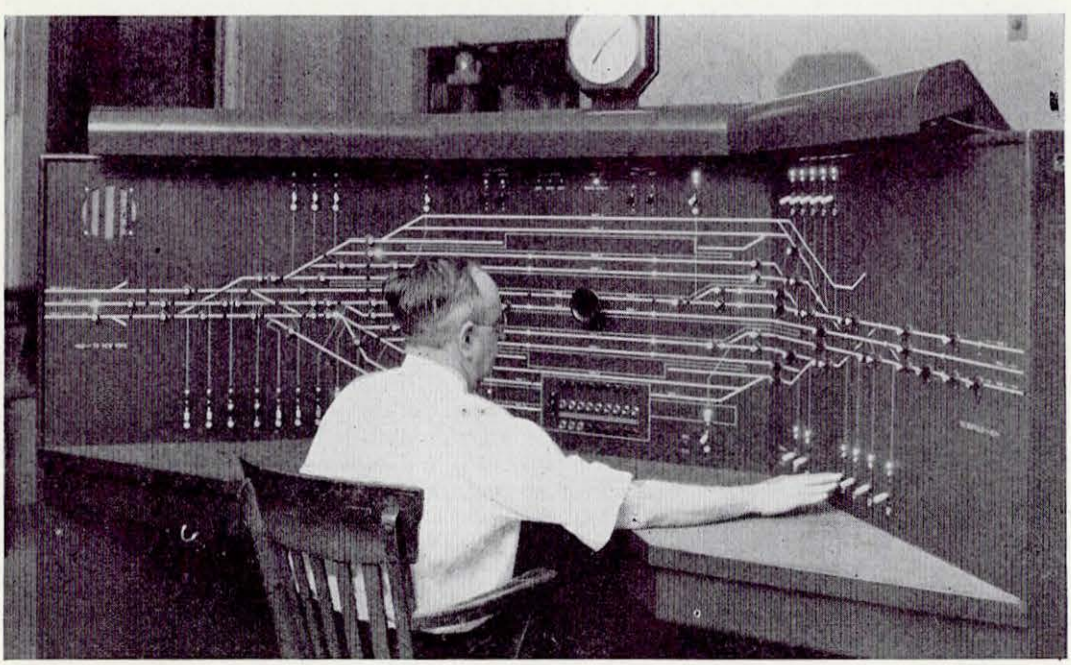
Searchlight type color-light signals are used throughout, those within the station area being dwarfs, arranged to display complete aspects so as to expedite train movements. The power supply system for this interlocking is a new development, including a mercury-arc rectifier for normal operation of the d-c. switch machines. Normally, the d-c. track and control circuits are fed through rectifiers which are fed from an a-c. source, the stand-by source of a-c. being furnished from a dynamotor driven from a storage battery. The special power supply equipment is of General Electric manufacture. All of the new signal and interlocking equipment, with the exception of the mechanical plant at the east end, was furnished by the General Railway Signal Company, the installation being made by the signal department forces of the railroad.

Other Buildings in Station Layout

The mail and service building is a two-story, steel-frame brick-faced structure, with reinforced concrete floors throughout, located directly back of the station on the north side of the tracks. This building is divided essentially into two units, one with a frontage of approximately 50 ft. on the tracks and approximately 75 ft. deep, housing station service facilities, and the other, with a frontage of approximately 110 ft. on the tracks and approximately 45 ft. deep, employed entirely in the handling of mail.

The service unit houses the heating plant, air compressors and transformers required for the entire station layout, and, in addition, at the second floor level, provides office space and a large room containing the main switchboards and the motor generator sets for charging storage batteries on coaches and electric tractors. An enclosed track hopper discharges the coal supply for the heating plant directly within the building, and a radial brick chimney, 150 ft. high, provides draft for the boilers. The boilers, of which there are three, are stoker fired and are provided with mechanical ash-handling equipment.

The mail unit of the building, which is provided with a truck elevator and a chute for the transfer of mail be-



The Desk Panel of the C. T. C.-Type Control Machine at Signal Station No. 1, Within the New Passenger Station

tween floors, fronts directly on the adjacent track platform at its second story level, and on the baggage subway and a large highway truck back-up space at the street level. The track-level floor, the track side of which is provided with three large overhead trucking doors, is given over to truck storage space, enclosed areas for postal clerks and transfer clerks, and trucking aisles to the elevator and mail chute.

The ground floor, which has wide, door-protected truck openings on both sides, has a raised U-shaped platform over which sacked mail or parcels are transferred from the platform trucks to street trucks, and vice versa, without the necessity of lowering and raising them to and from the floor level.

The new express building serving the station is located on the north side of the tracks, west of the mail and service building. This unit has a main two-story and mezzanine office unit, 90 ft. long by 55 ft. wide, fronting on Catherine street and Burnet avenue, and a covered loading platform 143 ft. long by 34 ft. wide, extending along Burnet avenue, with enclosed connection with the mail and service building and the baggage subway. This building, which provides complete facilities for the expeditious handling of express into and out of the city, is the same general type of construction as the mail and service building, and, like that building, it is reached from the track platforms entirely under cover.

The car facilities building, located on the north side of the tracks near the east end of the station track layout, is a brick building similar in general construction to the other auxiliary buildings at the station, with a two-story and basement main section, 57½ ft. long by 27 ft. wide; a one-story annex at one end, at the track level, 35 ft. by 27 ft.; and a coach receiving shed, on the track side, at the track level, approximately 50 ft. long by 25 ft. wide. Within this building, which provides complete facilities for making running repairs to passenger cars, including the changing of wheels, the main, or track-level floor, provides a large stores department room, an oil and journal box packing storage room, and a machine shop area. Within the coach receiving shed there is a wheel drop table, served by a pit and a wheel runway extending into the basement floor of the building, which is given over entirely to wheel storage space. The upper floor of the building provides offices for the car department and the Pullman department, a Pullman car cleaners and storage room, and a large car department locker room, together with adequate wash and toilet facilities.

Another separate building unit of interest at the station is the two-story brick and concrete refuse disposal building constructed on the north side of the tracks near North Crouse avenue. The upper floor of this unit, which is at the track level and connected directly with the adjacent track platform, is essentially a can cleaning room with a rectangular hopper in the center of the floor, which connects with a fixed chute which discharges directly into trucks at the street-level floor. Here, all garbage or refuse from the station or from cars can be disposed of readily, and loaded directly into city sanitary department trucks without rehandling.

Many Companies Represented in Work

The station and grade separation work at Syracuse has been planned and carried out by the engineering department of the New York Central, under the general direction of J. W. Pfau, chief engineer, and E. A. Dougherty, assistant chief engineer. Bridge design was handled by H. T. Welty, engineer of structures; building design by J. P. Gallagher, architect; and mechanical and electrical work by D. B. Thompson, mechanical and electrical engineer. The signal work was planned and carried out under the direction of F. B. Wiegand, signal engineer. All construction operations at Syracuse have been under the direction of A. D. Duffie, assistant engineer.

The principal contractors on the work have been the Walsh Construction Company, Davenport, Iowa, which handled all of the grading and bridge masonry work in connection with the track elevation, and also the construction of the station platform facilities; the American Bridge Company, which supplied the steel and erected all of the bridges; Wm. M. Ballard, Inc., Syracuse, which erected the passenger station and the mail and service building; the Duffy Construction Corporation, New York, which erected the express building and the refuse disposal building; and Gorsline & Swan Construction Company, Rochester, N. Y., which erected the car facilities building and the car inspectors' buildings. The steel for the passenger station and the mail and service building was furnished by the Bethlehem Steel Company and was erected by the McClintic-Marshall Corporation, while the steel for the express building was furnished and erected by the American Bridge Company. The Leach Steel Company, Rochester, N. Y., furnished and erected the steel for the car facilities building.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended September 26 totaled 807,070 cars, a new peak for this year and an increase of 177,135 cars or 28.1 per cent as compared with the total for the corresponding week of last year. This also represented an increase of 17,560 cars as compared with the total for the preceding week. All commodity classifications showed increases as compared with last year except grain and grain products, in which there was a decrease of 5,524 cars. Miscellaneous freight loading increased 63,440 cars and coal increased 79,955 cars. The summary, as compiled by the Car Service Division of the Association of American Railroads, follows:

Revenue Freight Car Loading

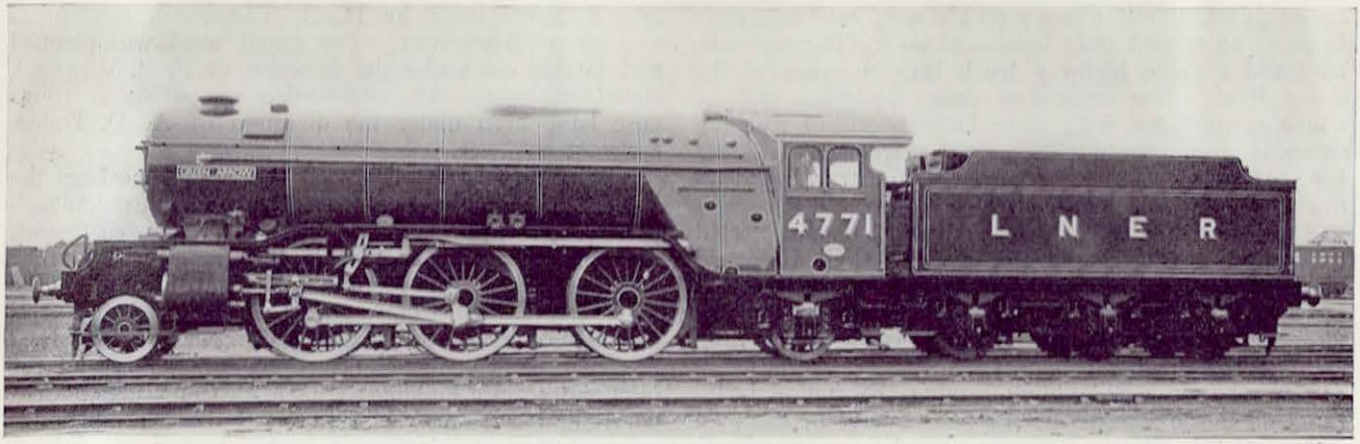
For Week Ended Saturday, September 26

Districts	1936	1935	1934
Eastern	158,942	141,727	133,154
Allegheny	162,081	114,852	114,808
Pocahontas	57,172	15,189	46,169
Southern	112,412	96,968	91,830
Northwestern	131,364	108,423	96,163
Central Western	120,092	98,768	104,596
Southwestern	65,007	54,008	59,364
Total Western Districts	316,463	261,199	260,123
Total All Roads	807,070	629,935	646,084
Commodities			
Grain and Grain Products	33,674	39,198	32,614
Live Stock	19,321	18,303	30,545
Coal	142,808	62,853	123,754
Coke	9,920	6,445	5,209
Forest Products	37,131	32,461	22,974
Ore	58,604	34,882	21,868
Merchandise L.C.L.	172,051	165,672	164,610
Miscellaneous	333,561	270,121	244,510
September 26	807,070	629,935	646,084
September 19	789,510	706,820	644,498
September 12	699,859	599,786	647,485
September 5	764,680	591,941	563,883
August 29	753,742	680,848	647,531
Cumulative Total, 39 Weeks	26,178,592	23,112,084	23,362,452

Car Loading in Canada

Car loadings in Canada for the week ended September 26 totaled 59,835 cars, a new high for the year. The

(*Continued on page 525*)



The 2-6-2 Type "Green Arrow" for Passenger and Express Service

Three-Cylinder Locomotives on the London & North Eastern

Two new designs for high-speed service—the 2-8-2 type has been streamlined

THE London & North Eastern has recently completed at its Doncaster Works the first of a series of 2-6-2 type passenger and express locomotives and four 2-8-2 type passenger locomotives. One of the illustrations shows No. 4771 (the 2-6-2 type) which has been named the "Green Arrow" and the other illustration shows the first of the 2-8-2 type to be completed, No. 2003, which has been named the "Lord President." The principal dimensions and weights of both types are given in the table. The detailed descriptions follow.

The Green Arrow

The boiler of the Green Arrow follows the design of the L. & N. E. Class A-3 Pacific type locomotive. It has a maximum barrel diameter of 6 ft. 5 in. and is designed for a working pressure of 220 lb. per sq. in. The grate area is 41.25 sq. ft., and grates of a special design give a ratio of air space to total grate area of 56 per cent. The total evaporative heating surface is 2,431 sq. ft. The boiler is provided with a steam collector through which all steam entering the throttle valve must pass. The entrance to the steam collector is through a series of circumferential slots cut in the top of the barrel plate. This arrangement has proved successful against priming. To avoid wire-drawing through the slots their total area has been made equal to twice the area through the throttle valve, which has a steam area of 38 sq. in. There are three steam pipes of 5 in. inside diameter. The locomotives are equipped with a 43-element Robinson superheater having a cast-steel header and short loop units 1½ in. in external diameter.

The boiler is fitted with a Davies & Metcalfe Exhaust steam injector on the right-hand side and with a Gresham & Craven No. 11 live-steam injector on the left-hand side. The barrel of the boiler and the firebox are insulated with Alfol. The cylinders are insulated with asbestos.

The three cylinders are each 18½-in. bore by 26-in. stroke. The cylinders, steam chests, smokebox saddle and all steam and exhaust passages are cast as one unit. The outside steam pipes are also integral with the main casting. Each cylinder is fitted with spring-loaded relief valves of large diameter in addition to the usual cylinder drain cocks. The latter are operated from the cab by Bowdenex cable. The piston valves are 9 in. in diameter. The valve gear is of a type which has been applied to over 470 locomotives on the L. & N. E., the valves for the outside cylinders being actuated by Walschaert gear and the inside valve being driven through a Gresley gear. The maximum cut-off is 65 per cent, in which position the valve travel is 5⅝ in. Ball and roller bearings are fitted to the valve gear throughout.

The piston heads and rods are of steel, forged in one piece, each piston head being fitted with two rings 5/16 in. wide. Cast-iron packing is used for the piston glands. All three cylinders drive on the second axle, the crank axle which takes the drive from the center cylinder being of five-part built-up construction.

The driving wheels are 74 in. in diameter, with 9½-in. by 11-in. journals. All of the revolving weight and 40 per cent of the reciprocating weight is balanced. The revolving weight at the center crank is balanced by means of extensions to the crank webs, while the remainder is balanced in the conventional manner in the wheel centers. The main and side rods are of chrome-nickel steel and are lubricated by wick oilers. Felt pads are fitted at the top and bottom of each bearing. The main driving journals are lubricated by a six-feed Wakefield mechanical lubricator carried on the

left-hand running board. The gear operating the lubricator, as well as a similar lubricator for the cylinders, is fitted with ball bearings throughout.

The engine truck is of the double-swing-link type permitting movement of 5½ in. either side of the center position. All of the swing-link pins and slides are lubricated by grease. The trailing wheels are fitted with Cortazzi axle boxes, designed to permit maximum movement of 2½ in. either side of the center position. The brakes on both engine and tender are of the vacuum type which two 24-in. diameter brake cylinders on the engine and two 21-in. diameter cylinders on the tender. This gives a braking power equal to 67 per cent of the weight on the wheels. A Davies & Metcalfe ejector is used. The locomotive is equipped with hand-operated sanders on the engine truck and steam-operated sanders on the driving wheels. The sand boxes, as well as the ashpan, are entirely of welded construction.

The six-wheel tender carries 5,250 U. S. gallons of water and 8.4 tons of coal and is equipped with a screw-operated water scoop. The total weight of the engine and tender is 322,784 lb.

The Lord President

The Lord President is a development of the two 2-8-2 type passenger locomotives, Nos. 2001 and 2002, named the "Cock o' the North"* and the "Earl Marischal," which were placed in service on the Scottish lines of the L. & N. E. in 1934. A further series of four locomotives is now being completed. The first of these, No. 2003, has been named the "Lord President." The front end of this locomotive has been designed along similar lines to that of the "Silver Link" type engines, as this external form has been found entirely successful in lifting the smoke clear of the engineman's view.

The boilers of the first three of these four locomotives are identical with those on the previous 2-8-2 type locomotives, having a maximum barrel diameter of 6 ft. 5 in., a distance between tube sheets of 18 ft. 11¾ in., 50 sq. ft. of grate area, and a total evaporative heating surface of 2,714 sq. ft. The working pressure is 220 lb. The boiler of the fourth locomotive will have a longer combustion chamber giving a firebox heating surface of 253 sq.ft. and a firebox volume of 319 cu.ft.

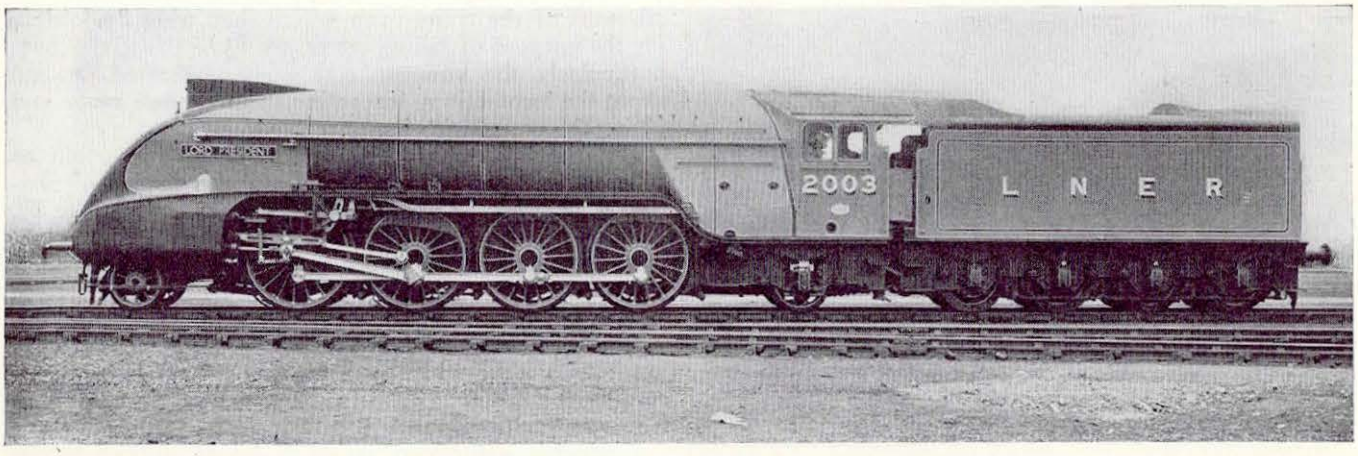
The grates used in these boilers have a ratio of air space to total grate area of 56 per cent. The boilers are equipped with 43-element Robinson superheaters. Access to the main smokebox door is through doors in the front streamline casing, one of which lifts upward and the other drops downward over the buffers. The doors are hand-operated through bevel gearing. A chime whistle is located in front of the stack. The boiler is fitted with a Davies & Metcalfe No. 12 Class H exhaust-steam injector on the right side and with a Gresham & Craven No. 11 injector on the left side. The boiler and firebox are insulated with Alfol.

The three cylinders are each 21-in. bore by 26-in. stroke and are cast in one piece. The piston rods and heads are of steel, forged in one piece. The piston valves are 9 in. in diameter and have a maximum travel of 5⅝ in. The valves of the outside cylinders are operated by

* *Railway Age*, July 14, 1934, page 33.

General Dimensions and Weights of the London & North Eastern Locomotives

	"Green Arrow"	"Lord President"
Builder	R.R. Co., Doncaster Works	R.R. Co., Doncaster Works
Number built	1	4
Road class	V2	P2
Road numbers	4771	2003—6
Type of locomotive	2-6-2	2-8-2
Service	Express and passenger	Goods (Freight)
Rated tractive force, 65 per cent cut-off, lb.	33,730	43,462
Weights in working order, lb.:		
On drivers	146,944	176,848
On front truck	24,640	23,968
On trailing truck	36,960	39,200
Total engine	208,544	240,016
Tender	114,240	129,696
Wheelbases, ft. and in.:		
Driving	15—6	19— 6
Engine, total	33—8	37—11
Engine and tender, total	36—2⅛	64— 0⅞
Driving wheels, diameter outside tires, in.	74	74
Cylinders, number, diameter and stroke, in.	3—18½ x 26	3—21 x 26
Valve gear, type	Outside, Walschaert; inside, Gresley	Outside, Walschaert; inside, Gresley
Valves, piston type, size, in.	9	9
Maximum travel, in.	5⅝	5⅝
Boiler:		
Steam pressure, lb.	220	220
Diameter, first ring, inside, in.	69⅜	69⅜
Grate length, in.	70⅝	86
Grate width, in.	83¾	83¾
Tubes, number and diameter, in.	121—2¼	121— 2¼
Flues, number and diameter, in.	43—5¼	43— 5¼
Length between tube sheets, ft. and in.	17—0	18—11¾
Grate area, sq. ft.	41.25	50.00
Heating surfaces, sq. ft.:		
Firebox	215.0	237.0
Tubes and flues	2,216.1	2,477.0
Evaporative, total	2,431.1	2,714.0
Superheating	679.6	776.5
Combined evap. and superheat	3,110.7	3,490.5
Tender:		
Style	Water bottom	Water bottom
Water capacity, U. S. gal.	5,250	6,250
Fuel capacity, short tons	8.4	8.96



The 2-8-2 Type "Lord President" With the Streamlined Front End

Walschaert gear, while the valve of the inside cylinder is actuated by the Gresley gear. Ball and roller bearings are used throughout the valve gear. The main and connecting rods are of chrome-nickel steel and all three cylinders drive on the second pair of coupled wheels. The engine truck is of the double-swing-link type.

Both engine and tender are equipped with vacuum brakes, there being four 21-in. diameter cylinders on the engine and two 21-in. diameter cylinders on the tender. The eight-wheel tender carries 6,250 U. S. gallons of water and 8.96 tons of coal. The total weight of the engine and tender is 369,712 lb.

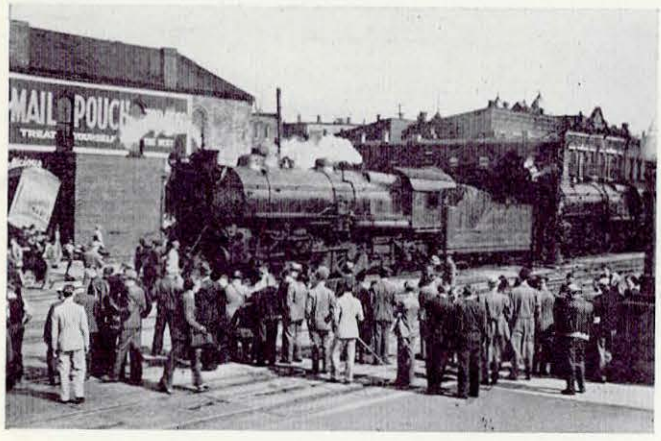
View of the Crowd at Ft. Wayne As It Converged on the Enginehouse

Chicago "Fan" Excursion Brings Out 472 Customers

RAILROAD "fans" and enthusiasts in the Chicago area—472 of them—became "railroaders for a day" on Sunday, October 4, when they took advantage of an "off the beaten track" excursion which was operated by the Pennsylvania through the Northern Indiana countryside at a fare of $3.50 for about 360 miles. The excursion was operated under the auspices of the Chicago chapter of the Railway and Locomotive Historical Society and was designed principally to afford members of the society and the public an opportunity to inspect and photograph railway equipment and facilities to an extent that is rarely permitted. It was also in the nature of an outing through sparsely populated rural areas where there was much of an historic and scenic nature to capture the interest of the passengers. A bright sun and moderate temperatures made conditions ideal.

Leaving from the north side of the Chicago Union Station at 9 a.m., eastern standard time, the train, carrying 10 coaches and 2 diners, traversed the Pan Handle line of the Pennsylvania southeastward 116 miles to Logansport, Ind., where it transferred to the Butler branch, traveling northeastward 76 miles to La Ott, Ind. At the latter point the train transferred to the Grand Rapids division, proceeding south 17 miles to Ft. Wayne, from which point the return trip of 149 miles to Chicago was made over the route of this company's Chicago-New York trains. Arrival in Chicago was at 7:12 p.m. E.S.T.

The "off the beaten track" part of the excursion came during passage over the Butler branch, where no regular passenger trains have been operated for several years. On this line, which traverses a rather heavily wooded agricultural region, the speed of the train was limited to a maximum of 45 miles an hour, and it was because of the limitations afforded by this portion of the route that it was necessary to employ light motive power on the outgoing trip, the train being pulled by two K-2 (light Pacific) locomotives as far as Ft. Wayne.



Photographing the Locomotives at Logansport

To make it possible for the passengers to keep themselves oriented throughout the trip and to identify points of interest, a detailed itinerary and other descriptive literature were provided. In the itinerary, which consisted of 15 mimeographed sheets, the railroad track was represented by a vertical line extending the length of each sheet. At the proper points along the line appeared the names of towns and cities, with mileages from junction points or important cities, and other notes identifying railroad intersections and yards, waterways, important industries, and other features of interest. The itinerary also included notes on matters of historical interest, such as the names of explorers, Indian tribes and early settlers identified with particular towns or regions.

Recognizing that the average railroad enthusiast is an avid collector of locomotive views, the railroad so arranged the schedule as to provide plenty of time for the wielding of cameras, of which there must have been in the neighborhood of 150 on the train, representing every conceivable type. Stops of about 40 min. each at Logansport and Ft. Wayne were made specifically for this purpose. At Logansport, those passengers with cameras hurried to the front end of the train, where they made a concerted onslaught on the locomotives, photographing them from all angles and positions. So absorbed in this occupation were many of the cameramen that they were oblivious to the tooting horns of local motorists who were waiting impatiently to get across the tracks. At all stops of the train, even where they were made only for the purpose of taking water, many of the passengers, particularly the younger contingent, swarmed on and about the locomotives, inspecting them at close range and plying the crews with innumerable questions.

But the big opportunity for the close inspection of railroad facilities and equipment and the display of photographic talent was afforded during the stop at the Ft. Wayne engine terminal of the Pennsylvania. Here elaborate advance preparations had been made. Locomotives of various sizes and for different classes of service had been arranged in the open where they could be conveniently photographed and inspected. For identification purposes a large white card bearing essential facts concerning the design of the locomotive was placed prominently on each engine.

Enginehouse foremen, acting as guides, showed groups

(*Continued on page 525*)

Management's Four-Fold Task*

Has obligation to labor, to investors, to public and to itself, in wise selection of future leaders

By M. W. Clement,
President, Pennsylvania

THE railroads, the country's chief source of transportation, are privately owned by the public at large. In addition to their million stockholders, there is also a great number of bondholders. Life insurance companies of this country have 33,000,000 policy holders and are all large investors in railway securities. Savings and other banks, educational institutions and fire insurance companies are dependent to a considerable extent on their railroad investments. The railroads are privately owned by the public at large also in the enormous amount of taxation that they pay to the various governmental divisions. The interest of the public in their performance is also reflected by the million employees and their families who are dependent on them for support and of the number of citizens dependent upon those employees through the income which they give to the communities in which they live.

The whole community is furthermore interested in railroad prosperity because of the hundreds of millions they spend each year for materials and supplies, new equipment and facilities which provide employment and wages for hundreds of thousands on the farms and in the factories, industries and ports of the nation. They are owned directly by the citizens themselves and not through the agency of any political body.

Reduced Rates and Reporting to Public

They are operated by professional managements, men who give their lives to the service and devote themselves to transportation from the time the railroad hires them to the end of their lives, and out of their service they acquire a faith and come to an understanding of their obligations. These obligations are four-fold, as follows: First, to the public which is served; second, to labor which operates the railroads; third, to the people and institutions who have provided the funds invested in the properties; and, fourth, to management itself. Management's obligation to the public consists in providing constantly improved service at relatively decreasing rates and the responsibility to keep the public informed periodically as to the health of the service and as to harmful governmental interference by regulation or statutes. We — all the employees — should give you uniform, efficient, courteous service. Being human, we may make mistakes and should correct them as we find them or as they are called to our attention. We should see that you are informed as to our problems so that you — the public — should have a sympathetic understanding of the questions that must be met and answered.

The subject of railroad labor is as complex as the government itself. Railroad employees of the nation, with their families and dependents, constitute a population equal to that of the larger states of the union. This is one of the main reasons, of itself, why government ownership and government operation of railroads would never be successful, not only from the viewpoint of government and the public, but above all from that of labor itself. There is no hard and fast line of demarcation between railroad labor and management. Thousands of railroad men over the country, by reason of their positions, are labor one minute and management the next. All management has come from the ranks of labor of one sort or another. All leaders of railroad labor have come from the ranks of labor. The railroad unions, taken as a whole, are the best in the country and the most ably led. Management is promoted labor, and by selection is supposed to be the most efficient of the group; yet it has frailties, of course, and the same human emotions. Railroad labor represents all types, every emotion known to man, and every philosophy known to reason.

Collective Bargaining vs. Dictatorship

The most efficient, equitable form of relationship between management, with its frailties, and labor, with its emotions, is through collective bargaining. Collective bargaining results in the union of effort on the part of labor to bargain collectively with a union of thought on the part of management, and you can not have collective bargaining without some form of organization, whether it be a labor union or an organization of employees. If labor is unorganized and deals with an arbitrary, not overly efficient management, injustice will be done to labor. If labor is strongly organized and led by arbitrary and not overly efficient leaders, labor loses again. In the earlier days of American transportation, under a feudal system, labor was rewarded for its toil as management determined. This policy was too often carried out by the management in power at the time with the unsatisfactory results that come from dictatorship. On the other hand, with the coming of collective bargaining, came the railroad labor organizations with their attendant shortcomings.

With the organization of American labor into national unions and its growth in political power, the tendency today is a swing in the opposite direction from the feudal system — toward the regimentation of labor by the leaders of labor — men hired by the union to manage its affairs. Labor can get no better conditions under the one autocracy than under the other autocracy. The labor unions are just commencing to demonstrate autocracy through their efforts to secure uneconomic regulations through legislation and restrictions by political force. American railroad labor is entitled to freedom from both the dictatorship of management and the dictatorship of labor spoilsmen. Freedom to manage its own affairs, to hold its own political views, its own religious views, its own view of unionism, are its inalienable personal rights. Freedom involves responsibilities, and labor should be willing to accept those responsibilities. In its approach to the practice of collective bargaining, it should be concerned with the fulness of life and the rights of fellow-employees rather than entrust all these responsibilities to autocratic leadership.

As management is organized by sectional units, so is railroad labor, by divisions and by territories. As labor assumes its responsibility, it should elect efficient leaders

* Abstract of an address at the annual meeting of the Harrisburg (Pa.) Chamber of Commerce on October 5.

to bargain with management. Then two groups of men, representing both management and labor, both with equal responsibility, should collectively consider the questions at issue and determine the just and equitable treatment which should be accorded in the interests of harmony and fair dealing.

Management's Responsibility to Labor

American railroad managements as a whole believe in collective bargaining, but upon their shoulders rests a responsibility to labor beyond that of labor itself. Management has a responsibility to the public that labor shall receive its just rewards, but also shall perform its just service to the public. In this, management should have public support. It has a responsibility that railroad labor leadership shall not lead labor into unsound economic paths, and that it shall not invoke expediency and sacrifice future stability. It has the immediate, direct responsibility of equity to labor and responsibility for the future welfare of labor considered in the light of the economic trends of the day.

When the train and engine service men come to the legislature for train limit and full crew bills, they come politically, on the basis of safety, but, actually, to make more jobs. What they would accomplish in the end would be less jobs, no more safety than heretofore and nothing for the men. It is management's responsibility to the public and labor alike to maintain safety and promote more economical transportation and, by performing service economically, make more work and more jobs. A liberal attitude by labor and management is not a solution of their problems but a way to look at them, and if they will look at them that way and approach them through collective bargaining by representatives deriving their just power from the consent of those represented, then can all the problems be solved with equity and justice; and only through such means can American Labor preserve its personal and economic freedom.

Railroad employees have individual rights, but accomplishment of any difficult task also requires discipline, whether self-imposed or imposed by higher authority. It is the duty of management in any organization built up in the American way to recognize the equal rights of all and to administer individual rights subject to the rights of the whole. Labor, individually or collectively, sees its immediate necessities. Management, on account of its responsibilities to the individual, must see not only his immediate necessities but the necessities of the future and must plan for that future.

Among the responsibilities of management to labor are considerations of the individual's safety, health, morale, contentment, promotion, discipline, and rules and regulations of employment. This situation is peculiarly American — without paternalism, without regimentation, without autocracy, but by negotiation and joint conferring, with liberalism on both sides — management fulfilling its obligations with the assistance and cooperation of labor.

Investors' Rights Must Be Protected

The great American public owns the American railroads. When the public recognizes the rights of the investor, it not only protects its own rights, but it recognizes the fact that by investment alone can it have transportation service.

Labor, equally with management, should be interested in the investor, for by investment alone have jobs been made possible. Twenty-five thousand dollars is the approximate investment in the railroad to provide a job. It makes no difference whether it is government funds or private funds; that much money had to be put into the plant to create the job, and, with the progress of the individual's occupation, with competition by other forms of transportation, and the never-ending fight against obsolescence, it is to labor's own interest to guard jealously the rights of the investor. Management, with full recognition of these things, and the play of other economic forces, knows that the investor must be protected equally with the public and labor if all three are to be properly served. In fact, so closely are personal rights and property rights tied together that the separation of one from the other would probably destroy both in a common disaster. It is the public's duty and it is labor's duty to see that management shall have a fair opportunity to perform its duty to the investor.

Management's obligation to itself consists in its duty, without prejudice or favoritism, to select by fitness from the ranks of the employees captains of tens so that they may be trained to be captains of hundreds, that they, in turn, through knowledge, training and experience, may broaden out to become the managers and executives of future years.

Selecting Future Leaders The Hardest Job of All

It is, perhaps, our most difficult task to select, by fitness of mind, breadth of vision, and capacity, the young men from the ranks who some day will be the managers of American transportation with an ability equal to, or surpassing, that of the great masters who have gone before them, with full recognition of their responsibilities to the public which management serves, the investors it protects, and to the labor it employs and directs. When you realize that some of our best transportation men were college-bred, and that some of our best engineers had little formal education, then you will understand somewhat the problem that faces management in the development of supervision. The philosophy of the Pennsylvania Railroad, and, I believe, the philosophy of all the American railroads is that of "live and let live," a recognition of the rights of all without fear or favor.

I. C. Starts Employee Training Program*

A LECTURE and correspondence training program for employees, the first to be undertaken on a large scale by any railroad, was started by the Illinois Central on October 2, with a total voluntary enrollment of more than 1,000 employees, representing practically every department in the railway organization. The entire training program, which is designed to cover a one-year period, will be carried on under the personal direction of Dr. Thor W. Bruce, assistant to the dean of the College of Commerce and Finance of the University of Illinois. It is so arranged that the 561 employees enrolled in and near Chicago will be able to attend lectures, while 445 who are prevented by distance from attending the lectures may take reading or correspondence courses. Lectures on general subjects will be given on Friday evenings, while discussions of railroad subjects by railroad officers will be held on Saturday mornings. The latter meetings will consist of two

(*Continued on page 526*)

* The formation of this lecture and correspondence course is the outgrowth of extensive studies of traffic department organization and merchandising conducted during recent years by the traffic department. Articles describing the merchandising methods and new practices adopted by the traffic department and their effects will appear in later issues of the *Railway Age*.

Labor Conditions in Bus Transport

Report to former Co-ordinator analyzes hours, wages, and working conditions, showing considerable improvement since 1933

WASHINGTON, D. C.

PART of the reason why bus fares can be made lower than those of the railroads is indicated in a comprehensive report on hours, wages, and working conditions in inter-city bus transportation, prepared by the Section of Research and the Section of Labor Relations, with some assistance from the Department of Labor, made public on October 7 by Joseph B. Eastman, former federal co-ordinator of transportation, as part of a series of investigations into labor conditions in various branches of the transportation industry. This report is Part I of the report on inter-city motor transport industries, and is to be followed by Part II on motor truck transportation and Part III on considerations common to motor bus and motor truck transportation.

In a foreword to the report Mr. Eastman says that these investigations were undertaken not only in the belief that the ascertainment and presentation of the essential facts were greatly to be desired but also with the thought that they might to some extent disclose the need for legislation. Since then, however, the motor carrier act, 1935, has become a law and under it the Interstate Commerce Commission now has the power, among other things, to establish reasonable requirements with respect to qualifications and maximum hours of service of employees and safety of operation and equipment of motor carriers. Furthermore, the emergency transportation act of 1933 has expired and the office of federal co-ordinator of transportation has ceased to exist. Because of these circumstances, the report is confined to a presentation of the facts developed by the investigation, with such comment on those facts as deemed pertinent to their consideration. The other parts of the report on inter-city motor transport, will be ready shortly. One reason for the investigation was the claim, made by the railroads, that they are handicapped in competition because labor standards are higher in the railroad industry than in the other forms of transportation, but the comparisons have been left for a later report on "Comparative Labor Standards In Transportation". Following is the summary of Part I;

Intercity transportation by motor bus dates essentially from the war and early post-war years, but its period of expansion into a major agency of transportation goes back no further than about the year 1924. At the outset, runs were short and equipment crude. As experience was gained, highways were improved, and more efficient and attractive equipment was developed, runs lengthened, larger operators emerged, and a nation wide, interrelated system of bus transportation came into being.

On the basis of the latest information obtainable, it may be estimated that approximately 3,500 operators[1] are engaged in furnishing scheduled common-carrier service over an aggregate of some 350,000 miles of route. They employ nearly 25,000 busses, some used interchangeably in scheduled and charter service. At least two-thirds of the operators do not actually move their equipment across state lines, but substantially all participate, though many only infrequently, in interstate business. The bulk of the traffic is handled by a comparatively small number of operators, in many of which the railroads are interested, in certain instances to the extent of complete ownership. Of the estimated total of 3,900 operators in 1934, there were only about 1,300 whose interstate service amounted to any considerable share of their total business. Of these, possibly 500 had one or two employees each while the remaining 800 had a labor force whose hours, wages, and working conditions are reasonably represented by the findings set out in the present report. The intercity operators who, because of their size or their location, participate only infrequently in interstate transportation, or who do only an intrastate business, numbered about 2,600. No attempt has been made to embrace the heterogeneous group of persons who, on an individual and irregular basis, furnish for-hire transportation. Generally, they have no employed labor force.

[1] Estimated as of December 31, 1935. The number of operators estimated as of December 31, 1934, was 3,900.

The Labor Force

The size of the labor force engaged in intercity bus transportation is as yet a matter of estimate. It appears, however, that the total force employed in 1934 numbered about 36,000, of whom 20,000 or 55 per cent were drivers, 8,500 or 24 per cent maintenance employees, and 7,500, or 21 per cent, station and office employees. Sixty per cent of the operators employ one-tenth of the workers; on the other hand, 5 per cent employ more than half. One-fourth of the companies surveyed had no established maintenance force and three-eighths had no station or office employees. Most of the small operators had their maintenance work done in commercial garages or, in some instances, by the drivers or owners. Similarly, the owners in some instances did the necessary station and office work, or parts of it were performed by connecting lines, by commission agents, or, in a few instances, by terminal or management companies.

Labor costs in 1933 absorbed about 32 per cent of operating revenues and accounted for about 34 per cent of operating expenses, with taxes included, or about 36 per cent with taxes excluded.

Sources of information, explained in detail in the text, comprise field investigations made as of July, 1933, and October, 1935, replies made by railroads for the same months covering their own operations and those in which they had an interest equal to 25 per cent or more of the outstanding capital stock, and certain Code Authority reports for March, 1934. The source designated hereinafter as "1933 railroad bus reports" did not embrace all operations in which the railroads were interested, as some were included in that year's field investigation.

Hours and Earnings, Labor Force as a Whole

In October, 1935, all employees averaged about 45 hours of work in a week; the earnings of those included in the railroad bus reports averaged $30.21 in the week or 65.5 cents an hour, and of those covered by the field study, $26.03 or 58.2 cents. The Code Authority report for March, 1934, indicated slightly higher weekly hours, and average earnings of $27.58 in a week or 55.8 cents per hour. In July, 1933, weekly hours averaged about 50; weekly earnings of $28.15 were found in the railroad bus reports and of $26.52 in the field study of that year; hourly earnings were 56.2 and 53.1 cents, respectively.

Drivers' Hours and Earnings

Drivers occupy a position of responsibility in the industry. They are classified as regular, relief, and extra. From 80 to 85 per cent of the drivers are assigned to regular runs. Regular drivers were on duty an average of approximately 43 to 44 hours per week in October, 1935, compared with 49 hours in the July, 1933, railroad bus reports and with 51 hours in that month's field study. Their average earnings in a week were $33.89 and $27.85 in the respective 1935 studies, or 77.4 and 65.2 cents per hour, compared with $30.45 in a week, or 62.4 cents an hour, in the 1933 railroad bus reports and $29.82 per week or 58.4 cents

an hour in that year's field study. About 85 per cent of the time on duty was spent en route. In the July, 1933, field study, regular drivers averaged 6.1 days on duty per week, relief drivers, 5.5 days, and extra drivers, 3.7 days. Per day, the regular drivers averaged 8.4 hours and the relief and extra drivers 8.2 hours. A standard work day of 10 hours or more was maintained by 14 per cent of the companies included in the 1933 field survey and by 20 per cent of those covered in that year's railroad bus reports. With 40 and 50 per cent of the respective groups the standard was 8 hours or more. Of the full-time drivers in the railroad bus reports, 29 per cent were on a standard 8-hour, 40 percent on a 9-hour, and 25 per cent on a 10-hour or longer standard day. Many of the companies have established a standard work day in terms of mileage, including some which also use the time basis. With 44 per cent of those companies, the standard was 200 miles or over and with 3 per cent, 300 miles or over.

Maximum permissible working hours were established by 56 (25 per cent) of the 221 operating companies covered in the 1933 field study. One company out of seven set the maximum at 16 to 20 hours; one out of five at 12; and one out of three at 10 hours.

Table I—Average Hours and Earnings of Drivers, Maintenance, and Station and Office Employees in Intercity Motorbus Operations, 1933-1935

Occupational group and source		Number of employees	Average hours worked in week	Average earnings in week	Average earnings per hour
All employees:					
1935:	Field study (October)	4,110	44.7	$26.03	$0.582
	Railroad bus reports (October)	6,944	46.1	30.21	.655
1934:	Code Authority reports (March)	12,056	49.4	27.58	.558
1933:	Field study (July)	8,784	50.0	26.52	.531
	Railroad bus reports (July)	3,795	50.1	28.15	.562
All drivers:					
1935:	Field study (October)	2,157	41.8	27.09	.648
	Railroad bus reports (October)	3,248	43.1	33.16	.769
1934:	Code Authority reports (March)	6,316	49.3	29.48	.597
1933:	Field study (July)	4,335	47.7	27.82	.583
	Railroad bus reports (July)	1,870	47.8	29.49	.617
Regular drivers:					
1935:	Field study (October)	1,963	42.7	27.85	.652
	Railroad bus reports (October)	2,966	43.8	33.89	.774
1934:	Code Authority reports (March)	5,374	51.5	30.33	.588
1933:	Field study (July)	3,406	51.1	29.82	.584
	Railroad bus reports (July)	1,640	48.8	30.45	.624
Maintenance employees:					
1935:	Field study (October)	1,106	48.3	26.56	.550
	Railroad bus reports (October)	1,992	48.9	29.00	.593
1934:	Code Authority reports (March)	3,172	51.4	27.48	.535
1933:	Field study (July)	2,400	54.1	26.13	.483
	Railroad bus reports (July)	1,097	51.5	26.76	.520
Station and office employees:*					
1935:	Field study (October)	847	47.0	22.25	.473
	Railroad bus reports (October)	1,704	48.6	26.00	.535
1934:	Code Authority reports (March)	2,568	47.1	23.01	.489
1933:	Field study (July)	2,049	51.0	23.52	.461
	Railroad bus reports (July)	828	53.5	27.01	.505

* Exclusive of superintendents and porters.

Drivers' usual consecutive hours on the road ranged from 1 to 11, but in a few instances reached 13. Hours spent consecutively at the wheel ranged generally from less than 1 up to 7. Maximum permissible hours of unbroken driving were reported as less than 8 for about two-thirds of the drivers and as less than 10 for all but 3 per cent of the drivers in 1933 and for all but 9 per cent in 1935.

For 38.3 per cent of the regular drivers the hours worked in the week (in July, 1933) were less than 48; for 39.1 per cent, from 48 up to 60; for 17.9 per cent, from 60 up to 72; and for 4.7 per cent, over 72. In the same month, 13 per cent of the regular drivers earned less than $20 in the week; 39 per cent, from $20 up to $30; 34.7 per cent, from $30 up to $40; and 13.3 per cent, $40 and more. Hourly earnings were under 35 cents for 4.8 per cent of these drivers; 35 up to 50 cents for 22.4 per cent; 50 up to 65 for 36.7 per cent; from 65 up to 85 for 31.1 per cent; and 85 or over for 5 per cent. The range in full-time monthly earnings reported in the 1935 field study was from $35 to $253, and from $50 to $274 in that year's railroad bus reports.

Variations of drivers' hours and earnings with size of company by which employed, by geographic regions, by size of community in which drivers live or in which their runs started, and by method of wage payment (mile, trip or time-rate) are developed in the report, as are variations in driver expense of operators serving identical termini and a more direct comparison between the average earnings of drivers in the employ of "railroad" and "independent" operators.

The report develops essential information respecting payment for overtime, bonus and penalty systems, reimbursement of drivers' out-of-pocket expense, vacation and sick leave, and related subjects. Brief mention also is made of the hours and earnings of special employees in bus crews, including bus porters.

Hours and Earnings of Maintenance Workers

Skilled mechanics comprised about 55 per cent of the maintenance force, and mechanics, foremen and mechanics' helpers about 75 per cent. Cleaners and garage and service employees made up the rest of the force. In the three years for which data were obtained, there were on the average 50 to 60 maintenance workers per 100 employed drivers. Their compensation was about 28 per cent of that paid all employees. As previously stated, one-fourth of the operators surveyed in the 1933 field study had no maintenance payrolls.

In October, 1935, the hours worked by the maintenance force as a whole averaged between 48 and 49 in the week; average weekly earnings in the field study of that year were $26.56, or 55 cents per hour, and in the railroad bus reports, $29, or 59.3 cents per hour. The average work-week found in the October, 1935, field study was 6 hours, or 11 per cent shorter than that found in the July, 1933, field study, and earnings per hour were about 7 cents or 14 per cent greater. Little change occurred in weekly earnings. The railroad bus reports showed a decrease of 5 per cent in average weekly hours and increases of 8 and 14 per cent in weekly and hourly earnings, respectively. The changes between 1933 and 1935 appeared to be generally distributed rather than confined to specific areas.

The report shows geographic variations in the hours and earnings of the maintenance force as a whole, and develops in considerable detail the average and range of hours and earnings and other information respecting individual occupations. The report also sets forth information respecting bases of wage payment, payment for overtime, and vacation and sick leave privileges.

Hours and Earnings of Station and Office Workers

Station and office workers (not including commission agents) accounted for about 21 to 25 per cent of the labor force of intercity bus operators and for 18 to 21 per cent of the payroll expense. Agents and ticket sellers constituted 31 to 40 per cent of the station and office employees covered in the several studies; clerks, stenographers and typists, 19 to 31 per cent; dispatchers, 6 to 8 per cent; bookkeepers, 3 to 8 per cent; and traffic solicitors, 3 to 6 per cent. There were also a number of miscellaneous occupations. Women made up about 25 per cent of the station and office force.

The October, 1935, field survey indicated that the hours worked by all station and office employees, other than superintendents and porters, average 47 in the week and that earnings averaged $22.25 or 47.3 cents per hour. In the corresponding railroad bus reports the hours were 48.6 and the earnings $26.00 or 53.5 cents per hour. In the July, 1933, field study, hours were 51 and earnings $23.52 per week or 46.1 cents per hour; and in the railroad bus reports of the same month, hours were 53.5 and earnings were $27.01 and 50.5 cents, respectively. In the 2-year period the work-week declined 4 to 5 hours (approximately 9 per cent), average hourly earnings increased 1 to 3 cents (not over 6 per cent), and average weekly earnings fell by a little over $1.00 (4 to 6 per cent). An average work-week of 6.3 days was found in the 1933 field study.

The report develops in detail the facts respecting variations in hours and earnings between occupations and by geographic regions, bases of wage payment, payment for overtime, and vacation and sick leave privileges.

The report concludes by calling attention to the companion report which summarizes existing state regulations of the hours of service and qualifications of both bus and truck drivers, discusses some aspects of driver fatigue, and traces developments in labor relations in the two branches of intercity motor transportation.

While the report makes no comparison between the

duties of a railroad train or engine employee and those of a bus driver it includes the following as to the requirements of bus drivers:

Duties of Bus Drivers

By virtue of his duties and responsibilities, the bus driver has in many respects the most significant post among wage earners in the industry. His work calls for exercise of skill and judgment above that required of the general run of drivers of motor vehicles. He must be able to operate equipment which in the majority of instances is large and heavy, over poor roads as well as good, in all kinds of weather, often through congested traffic, with care for the safety and riding comfort of his passengers. He must be able to maintain a schedule without endangering his own passengers and vehicle or the life and limb of other users of the highway. His schedule frequently calls for high and sustained road speeds. Safeguarded by no advance signals or other guarantees of right of way comparable with the safety devices which protect a passenger-train engineer, he must be equally alert to react quickly and surely in emergency.

Moreover, the bus driver in scheduled common-carrier service is conductor as well as chauffeur. He is responsible for ticket-taking, collection and custody of cash fares, delivery of passengers at connection points and destinations, and maintenance of order within his vehicle. He also may have duties in connection with the transportation of newspapers, express parcels or mail. Several companies require their drivers to be salesmen and count on them to sell a substantial amount of transportation in addition to tickets sold at stations and agencies.

In charter operations the driver's duties are similar in many respects. In addition, the driver of a chartered bus sometimes must maintain a tentative schedule over what may be an unfamiliar route, must act as mechanic in case of trouble, must carefully check his passenger list from time to time, and in most cases must accommodate the operation of his bus to the general desires of his patrons. In some instances he is subject to orders given by his party, who may arbitrarily decide time of departure, layovers, and routes. On the other hand, drivers in charter service sometimes have full days of layover with only such duties as cleaning the equipment, tuning the motor or tire repair to occupy them.

The driver is thrown into close contact with his passengers and inevitably makes an impression upon them, good or bad. Each driver is willy-nilly a traveling general agent for his company, and collectively the drivers are their employers' chief point of contact with their patrons. In consequence, especially in scheduled service, managements have been led to lay upon their drivers a variety of special injunctions and duties, such as rules regulating conduct in the interest of gaining good will, devices for gathering information about the wishes and needs of patrons, and in some instances schemes for selling tickets and extending patrons' use of the line, accompanied by incentives in the way of special bonus payments.

Steam Railroad Session at National Safety Council Meeting

Ralph Budd and Commissioner McManamy among speakers—Future status of Section discussed

THE 25th national safety congress and exposition of the National Safety Council was held this week at Atlantic City, N. J., with the Council's Steam Railroad Section holding a half-day session on October 7. The program of the latter, over which W. W. Wood, superintendent of safety and welfare for the Baltimore & Ohio, presided, included addresses by Ralph Budd, president of the Chicago, Burlington & Quincy; Commissioner Frank McManamy of the Interstate Commerce Commission; C. H. Paris, chief engineer of the Chicago & Illinois Midland; and A. V. Rohweder, superintendent of safety and welfare for the Duluth, Missabe & Northern.

Mr. Budd spoke on "Management's Responsibility for Safety Work on the Railroad"; Commissioner McManamy on "Safety Today on American Railroads as Viewed by the Interstate Commerce Commission"; Mr. Paris on "Safety in Railroad Construction and Maintenance from the Viewpoint of a Chief Engineer"; and Mr. Rohweder on "Safety on Railroads and Its Relation to Community Safety."

Following the completion of this formal program there developed considerable discussion as to the future status of the National Safety Council's Steam Railroad Section. For the past four years it had been consolidated with the Safety Section of the Association of American Railroads. The board of directors of the latter, however, elected not to renew the consolidation agreement which expired this year. Leading this discussion was John E. Long, superintendent of safety for the Delaware & Hudson and former president of the National Safety Council, who proposed a motion to the effect that it be recorded as the feeling of those attending the meeting that the Steam Railroad Section of the National Safety Council be again organized, that proper committees be appointed to bring this about and that railroad discussions be continued on programs of National Safety Council meetings.

H. A. Rowe, manager of the claims department of the Delaware, Lackawanna & Western, contended that, in view of the A.A.R.'s action determining the relationship of its Safety Section with the National Safety Council, no person present was authorized to act on Mr. Long's motion. Mr. Long disagreed, however, pointing out that the A.A.R. had merely discontinued its affiliation with the N.S.C. but had said nothing on the continuance of the latter's Steam Railroad Section. Here T. W. Carrow of the Pennsylvania, while expressing sympathy for the point of view reflected in Mr. Long's motion, suggested that the matter be turned over to the committee of direction of the A.A.R. Safety Section. Mr. Carrow as a member of that committee promised to work there for the matter's early consideration. But Mr. Long persisted in his demand for a vote, pointing out again that the motion contemplated "nothing more than an expression of sentiment" in favor of continuing the Steam Railroad Section. Next Mr. Rohweder spoke in favor of the motion in his capacity as vice-president of the National Safety Council. Then came the vote and the motion was carried by a large majority.

The only other proceedings of the meeting were brief discussions of each of the scheduled addresses listed in the foregoing. These addresses are abstracted below.

Railroad Management and Safety

Mr. Budd divided his address into three parts, discussing in turn those safety activities which depend upon co-operation of employees; those which are the

sole responsibility of management; and finally the desirability of the public taking a greater interest in safety matters. The railroads, he asserted at the outset, "are justly proud of their safety record"—in a period of remarkable developments in transport "riding in a passenger train is about the safest thing one can do," and, while running a locomotive "was once considered hazardous employment," engineers are now "noted for their longevity." This high degree of safety, he continued, has been attained "notwithstanding a combination of most difficult circumstances," such as the depression, the demand for improved service, the struggle for traffic, and the need for operating economies.

From a managerial standpoint, Mr. Budd went on, safety is a matter of policy and responsibility for the policy rests primarily on the chief executive. He pointed out in this connection how management, "actuated by humanitarian as well as what may be termed an enlightened self-interest, has made safety a watchword"—how it "has set for itself a standard higher than required by technical legal liability, the purpose being to maintain and operate the railroads in such manner that there shall be no injuries to passengers or employees, and no damage to property."

The speaker next explained how accident prevention by co-operation between men and management has been promoted through safety meetings, the enthusiasm at which "speaks conclusively for the attitude of the men." Recalling at this point the saying, "the best safety device is a careful workman," Mr. Budd added that "experience has shown that the best device for making more workmen habitually more careful is a good safety department, well supported by management."

It was Mr. Budd's next observation that each unit of property design, built and maintained for a specific purpose, presents its own safety problem. He pointed out in this connection that "it is by no means essential to safety that the latest types of equipment, the newest inventions or the highest quality of track should be provided at all times and all places." It is, however, "essential that the adopted standards be proper for the demands and requirements of the service"—the railroad is a vast aggregation of units of all kinds of physical property, and "if each unit is operated consistently with its capabilities and limitations, the operation is safe."

Speed Calls for Special Attention to Safety

Coming to his survey of the field wherein safety is the sole responsibility of management Mr. Budd discussed recent developments "in bettering the physical plant and advancing railway operation, particularly in speed and efficiency." The great improvement in passenger and freight service, he said, "has called for special managerial attention to safety." He next referred to recent observations made by W. J. Patterson, director, Bureau of Safety, Interstate Commerce Commission, and published in the *Railway Age* of August 1. Calling Mr. Patterson's observations "perhaps the most significant statement" concerning recent improvements in railway service, Mr. Budd proceeded to discuss in turn the four phases of railway operation which the Director of the Bureau of Safety had said "required careful attention in connection with the handling of faster trains." These four phases are: Track, signals, brakes and equipment.

As for track, Mr. Budd said, "what was and is involved is a careful appraisal of the characteristics of each stretch of track, and a careful laying out of schedules to suit actual track conditions; then a constant watchfulness to make certain that the condition which is suitable for the scheduled speed is always maintained." While, he added, several rather essential things have been done to track, "all of them have followed well-known engineering principles and practices." He referred briefly to track adjustments which have been found necessary to accommodate high speed trains, finding "evidence that the problem not only is well understood but is being capably handled," in the fact that "with all of the high speed operation that has taken place in the last two and a half years there has not been a single derailment due to track conditions."

Likewise with signaling, Mr. Budd explained "there is no new principle of engineering involved, but the signals must be so located that the highest speed trains can be stopped in the distances available, having, of course, due regard for grades, allowable braking ratio, and, more particularly, what it is known can be done in actual practice in the way of retardation of the particular train involved."

Also, the subject of brakes has not been overlooked by management, Mr. Budd asserted as he cited brake tests conducted with high-speed trains, which tests "have furnished the basis for further engineering development of the brake art." Here again, he repeated, "safety depends upon a proper understanding of the characteristics of the particular train at various speeds, and also upon skillful handling of the train"—that railroad men and management "have this understanding and skill is evidenced by several million miles of safe, high-speed train operation."

Turning to the fourth question raised by Mr. Patterson—equipment—Mr. Budd listed the various types of high-speed trains, new and rebuilt. He observed in this connection that "so long as sound engineering and high quality of construction are use, there does not seem to be any reason why they should not all be safe;" and he is confident that "all of the railroads which have built these trains have had in mind" the points mentioned by Mr. Patterson. The Zephyrs, as designed and constructed, he said, "fully comply with all the requirements of the railway mail service strength specifications, which have been followed for many years in building not only mail cars but passenger cars as well."

Referring to the speed capabilities of the new trains Mr. Budd said that, while they have set new railroad records and their test performances have been spectacular, it is surprising as to their actual service runs how little increase in maximum speed has been required to maintain the fast schedules. The old schedules, he explained, called for high speed for short distances but much time was lost stopping and starting, refueling, doing station work, etc. Thus their performance curves are "successions of peaks and deep valleys, resulting in an average speed about midway between maximum and zero." The performance curves of the new trains, on the other hand, "show fewer valleys and smaller ones, and the average speed is more than two thirds of the maximum. Frequently maximum speed of the new trains is only 10 or 12 m.p.h. faster than that of the old, but the average speed between terminals is increased by 25 m.p.h."

Safety Requires Enforcement of Traffic Laws

The remainder of Mr. Budd's remarks referred to the public's interest in safety matters—particularly highway safety. He pointed out that although "less than 5 per cent of motor accidents occur at railroad crossings," the railroads, like the general public, "suffer from the careless motorist." He referred to crossing accidents wherein trains have been derailed and railroad employees killed or injured. Although he called grade separation the ideal solution, he reminded his audience that all crossings cannot be eliminated for many years and thus the

problem must be dealt with "by utilizing existing facilities in the safest possible manner." This, he said, requires co-operation of the public—particularly those operating motor vehicles. Mr. Budd cited in the latter connection two serious grade crossing accidents wherein gasoline trucks had been struck by trains with resulting fires. Investigation of one showed that not only had the driver of the truck failed to observe the law requiring him to stop on approaching the crossing, but that neither he nor his employer knew of such a law. The I.C.C. recommended that local authorities take effective steps to enforce the law but the latter were without funds to police enforcement. Hence Mr. Budd's observation that laws designed to protect the public against death and injury in motor vehicle accidents "are futile unless there is adequate provision for policing of the highways."

The I.C.C. and Railroad Safety

Commissioner McManamy brought from the I.C.C. "cordial good wishes and assurances of continued sincere and hearty co-operation in the great work in which the National Safety Council is engaged." He then proceeded to give a brief history of the activities of the commission in the interest of safety on American railroads, pointing out, however, that any views expressed would be his own and not those of the commission.

Sketching briefly the beginning of the safety movement on railroads, Mr. McManamy pointed out that even before the commission's existence "the need for protection of employees engaged in the then extra hazardous occupation of operating trains" had attracted the attention of humanitarians throughout the country; that in 1871 Senator Sumner of Massachusetts introduced into Congress a resolution providing for an investigation of the problem; and that in 1889 President Harrison, in his first message to Congress, urged that legislation be enacted to protect railroad employees. This recommendation was repeated in 1890 and again in 1891, a number of states meanwhile having enacted such legislation. Because of the lack of uniformity in them, and their failure to bring about standardization of railroad equipment, these state laws, Mr. McManamy said, "often created additional hazard." Thus all parties turned for relief to the Interstate Commerce Commission, which had been created in 1887.

The commission's first step, he recalled, was to summon in 1889 a conference of state commissioners, which conference adopted a resolution requesting the commission to make such recommendations to the railroads and to Congress as it might consider proper and necessary. Then, after receiving replies to a questionnaire, the commission embodied in its first report to Congress recommendations for the promotion of safety; and, Mr. McManamy added, "subsequent annual reports almost without exception have contained further recommendations with respect to safety, most of which have been enacted into law." Thus, he went on, the duties of the commission with respect to the promotion of safety on railroads "are prescribed by a series of separate laws enacted by the Congress at different times, most of which were in response to urgent demands by the railroad employees for protective legislation."

Next Mr. McManamy listed these various safety laws, explaining briefly the general purpose of each. Included in his listing was the safety appliance act of 1893, requiring power-driven brakes, automatic couplers and grab irons, and its 1910 amendment requiring additional appliances such as hand brakes, ladders, running boards and sill steps; the medals of honor act of 1905 extending Congressional recognition to those endangering their own lives in saving or endeavoring to save lives from railroad accidents, or in preventing or endeavoring to prevent such accidents; the hours of service act of 1907; the ash pan act of 1908, which made it unlawful to use in interstate commerce any locomotive not equipped with an ash pan which can be dumped or emptied and cleaned without the necessity of an employee going under the locomotive; the transportation of explosives act of 1908 and its 1921 amendment to include inflammables and other dangerous articles, both of which "contrary to the usual procedure" were advocated by the railroads; the accident reports act of 1910; the boiler inspection act of 1911; and section 26 of the interstate commerce act which was enacted in 1920 to give the commission authority to require carriers to install automatic train-stop or train-control devices.

Laws Have Promoted Safety and Efficiency

"The results of these laws," Mr. McManamy said, "have been two-fold: That they have promoted safety in large measure is abundantly proven; that they have been equally effective in promoting efficiency in railroad operation is not now questioned." Many of the devices required by law, he continued, were workable when the laws were passed and thus "they would no doubt have eventually come into general use." Yet he thinks that "the experience of the carriers in their efforts to regulate the transportation of explosives proves that it would only have come about after a long period of years and even then the degree of uniformity and standardization necessary to provide adequate safety would have been lacking."

After the foregoing resumé Mr. McManamy recalled how "for more than two decades the commission labored under difficulties in its work to promote safety," there being no regular safety movement as at present. "Safety agents or superintendents of safety on railroads," he added, "had not even been suggested" in those times when from his own experience he remembered how "railroad employees who would take the greatest chances in the interests of expediting their work were considered the best employees." To show how far safety work has since advanced the speaker pointed out that in 1890 out of a total of 749,301 railroad employees 2,451 were killed in the performance of their duties, whereas in 1935 this had been reduced to 600 killed out of 1,013,654 employees; in 1890 one passenger was killed for each 41,426,000 miles traveled, while in 1935 one passenger was killed for each 616,983,000 miles traveled. Furthermore, in the latter year "not a single passenger was killed in a collision or derailment."

Mr. McManamy does not attribute to the I.C.C. regulations all the improvement in safety on railroads—"far from it"; but he did say that "in so far as the particular devices and practices covered by these regulations are concerned, they have proven a pretty complete remedy and have also helped to make railroad officials and employees safety conscious." The commission, he continued, has always sought the co-operation of railroad officers and employees in its safety work, and "for more than a quarter of a century it has received such co-operation to a remarkable degree. The results show conclusively that at the present time travel by railroad is the safest known means of transportation"—a statement which, he added, is not news but which nevertheless calls for frequent repetition.

Mr. McManamy next referred briefly to the new duties in connection with safety on the highway which have come to the commission through the motor carrier act. In closing he cautioned against any assumption from his remarks that "the question of safety on railroads has been solved for all time." Safety problems, he said in

this connection, have in the past been met as they arose, and such must be the future course if reasonable safety is to be provided while transportation is passing through its present evolution, or "revolution," one phase of which is the meeting of "the public desire or craze" for speed. Citing the statistics of grade crossing accidents and pointing out by example how fast trains increase this hazard he suggested that the only remedy for such a situation is grade separation, which "should be the immediate objective" wherever high-speed trains are operated.

Safety in Maintenance of Way Department

Mr. Paris opened with references to Accident Bulletin No. 103 of the Interstate Commerce Commission, which shows, in table No. 55, casualties by classes of employees and other persons in non-train accidents. He cited in this connection the maintenance of way department casualty rate for the 10-year period, 1924-1934, which, he pointed out, was greater than the casualty rate for all employees on duty. In 1934, for example, it was 8.06 casualties per million man hours worked while the rate for all employees was 7.04; also, in that year the spread between the lowest and the highest rates for the maintenance of way department was from 0 to 89.11.

From these and other similar figures Mr. Paris reasoned that the maintenance of way department has a safety problem resulting from a casualty rate which is "too high and too widely divergent as between the different carriers." He proceeded to discuss in turn the four principal causes of injury to maintenance of way department employees—handling rail, ties, timber, etc.; falls; using hand tools, jacks, etc.; motor and hand car accidents—and found in each instance that injuries due to failure of equipment and tools are rare. Throughout the four, however, "runs the taint of poor supervision, poor training, carelessness or some other trait dependent on the human element." Thus Mr. Paris turned to a closer examination of the human element, pointing out how I.C.C. accident report No. 103 shows that "out of 6,000 train accidents in 1934, costing $7,600,000, 30 per cent were due to negligence of employees;" and how the I.C.C. has stated that "85 per cent of all accidents are due to the human element."

Human Element Predominant

Such predominence of the human element convinces Mr. Paris that the maintenance of way department safety problem "resolves itself into one of 'personnel administration' rather than one of improvement in tools, equipment and materials." With the job of creating safety consciousness "pretty well done," he thinks that "if we are now to place the work on a still higher plane, we must begin to set up our statistical data accordingly." Hence, after citing as an example the casualty rates which Lew Palmer of the Equitable Life Assurance Society set up 14 years ago as a yard stick for comparisons between railroads, the speaker asked "Is it not time to set up still another yard stick for the measurement of results in terms of the human element, that is 'man failures' and 'supervision failures'"? It has been Mr. Paris' observation that "high accident frequency is a very good barometer of low man power performance;" and, since "the common word for good performance is efficiency, efficiency and low casualty rates go together." Thus the question becomes "one of whether high or low standards of efficiency are desirable.

In order to secure the desired efficiency, Mr. Paris continued, a railroad should strive to awaken the "combined potential ability lying dormant in its groups of employees." And this can be done by recognizing that employees are eager to advance their company's interests, but, being human, they crave some recognition which indicates that their efforts are appreciated; and by realizing that however kindly disposed chief executives may be, such an attitude is lost on an employee who is contacted "by some surly, uninformed" intermediate superior. "Too many men in supervisory positions," the speaker next observed, "lack training in the technique of their job. This lack of adequate supervision and training in supervisory positions is a contributing factor to this 85 per cent of accidents due to man failures."

Reports Do Not Expose Human Failures

Furthermore, alongside the present emphasis placed on the improvement of material, tools and equipment, Mr. Paris deplored the lack of data which precludes a railroad's knowing "how many of our accidents are due to 'man failures' or to 'supervision failures';" also, he criticized the situation wherein "we set up rigid specifications" for material but "when we employ men in the maintenance of way department we too often have no specifications at all."

Turning to specific suggestions for an adjustment of the accident reporting system, Mr. Paris would first make a standard classification of non-train accidents in the maintenance of way department. Then, he continued, there should be shown opposite each class of accident the proper charge against either the human element or the physical plant—the human element to be subdivided between man failures and supervision failures. It is his view that "correct and standardized statistical data of this kind will enable those roads adopting definite plans of employee improvement to gage their work the same as we now gage our general safety performance by means of the general casualty rate." He feels certain that department heads do not now "appreciate the importance of setting up a definite classification of causes of accidents, in order that we may bring before our managements the fact that our investment in man power is far greater than our investment in physical property, and is therefore entitled to much more consideration in the matter of training."

As an example of the foregoing Mr. Paris pointed out how an engine failure which results in setting aside an $80,000 investment causes real concern. Yet, he asks, "What about the foreman in a shop having 100 men earning an average of $100 a month? This represents an annual income of $120,000 and, capitalized at 6 per cent, represents an investment of $2,000,000 in man power. The $80,000 investment in a locomotive is only the equivalent of the investment in four men capitalized as above."

Safety One of Greatest Cards in Railroad Deck

"Safety," Mr. Paris concluded, "is one of the greatest cards in the railroad deck, but one cannot provide safety for the public unless he also provides safety for the employee, because safety is primarily an attitude of mind that must be cultivated and developed. It is a matter of training and education. It is a matter of supervision, and, furthermore, it is a matter of policy. Safety starts at the top and is reflected all the way down the line in exact accordance with the backing received from the management. If we are to place our safety work on the new higher ground it must occupy in order to follow the new trend of railroad development, we must place the emphasis on employee improvement, in proportion to the relative position that the employees hold in comparison with the position held by the physical property, as I have

outlined. The new objective could very well be the 'building of men.'"

Railroad Safety's Relation to Community Safety

Mr. Rohweder first expressed the pride of railroad men in the achievements of the railroads "in conserving the lives and limbs of our employees and passengers." These achievements, he added, have resulted from many years of progress. They did not "just happen"—rather they have come from "years of hard, sincere, conscientious effort" on the part of the managements in co-operation with employees and such agencies as the A. A. R. Safety Section, the I. C. C., the National Safety Council, the American Museum of Safety and various state bodies.

Among the many problems which "are difficult for the safety organizations and railroad managements to combat," Mr. Rohweder listed first those created by the trespasser. The present situation wherein many attempt to steal rides on trains, wherein children, fascinated by railroading, are attracted onto railroad property, etc., "has created a hazard which is costing the lives and limbs of Americans." Next he listed the grade crossing problem which, he said, the railroads have mitigated materially with their constant "battle cry"—Cross Crossings Cautiously.

Mr. Rohweder continued to point out how railroad safety officers have promoted community safety by talks to civic and fraternal groups, and radio addresses. He then proceeded to urge the necessity for greater activity in the foregoing connection, citing as an example recent intensified work along that line in Minnesota. It was his expressed desire "to impress on the mind of every railroad manager and safety officer the fact that there is an unusual opportunity now being afforded them to attack the trespasser and the railroad grade crossing problems through their active support and co-operation with the state and local safety councils throughout this nation."

Community Safety Work a Public Relations Opportunity

The speaker stressed also the "public relations opportunity" in community safety work as he called upon his audience to visualize the results "in good-will" that flow to railroads which assume leadership in movements to conserve life, "whether it be on a railroad, a street or highway, a farm or in a home."

"Let me point out," he continued in the latter connection, "that the loss to railroads is felt just as keenly in a shop or an enginehouse, whether the employee is killed in the service of the railroad or in the crash of a motor vehicle. We as railroad officers have no right to expect that we can make our employees safe only for the time of their regular shift, but if we are to do a proper job, we will make them safety minded and safety conscious through all their activities."

Freight Car Loading

(*Continued from page 513*)

increase over the previous week was 174 and 4,069 over last year, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
September 26, 1936	59,835	23,134
September 19, 1936	59,661	22,675
September 12, 1936	52,909	19,427
September 28, 1935	55,766	22,102
Cumulative Totals for Canada:		
September 26, 1936	1,789,022	892,691
September 28, 1935	1,716,748	823,775
September 29, 1934	1,699,210	848,970

Rock Island to Buy Six Streamlined Trains

THE Chicago, Rock Island & Pacific, subject to the approval of the federal district court and the Interstate Commerce Commission, will purchase six light-weight streamlined trains at a cost of approximately $2,250,000. The plans, which are not as yet fully developed, provide for the operation of one train between Chicago and Peoria, Ill., on a round trip schedule, tentatively set at 2 hr. 45 min. in each direction; one train between Chicago and Des Moines, Iowa, on a round trip schedule of 6 hr. in each direction; two trains between Kansas City, Mo., and the Twin Cities on a schedule of 8 hr.; and two trains between Kansas City and Denver, Colo., on a schedule of 11 or 12 hr. It is planned to establish the new trains early in 1937.

To determine the type of equipment to be purchased alternative bids have been asked on aluminum and stainless steel and Diesel-electric and steam motive power for three and four car trains.

E. M. Durham, Jr., chief executive office, in commenting on the Rock Island's streamline program, said, "We hope to make this new equipment the last word in safety and comfort and in modern accessories and conveniences. These new trains are a part of the program of the Rock Island to improve its service and facilities. We feel the recent development in streamline, air-conditioned equipment has proven popular with the public, and the Rock Island proposes to do its share in that direction."

Chicago "Fan" Excursion Brings Out 472 Customers

(*Continued from page 516*)

of the excursionists around the grounds and through the 42-stall enginehouse, explaining essential features of the terminal and of the locomotives on view, and answering the multitude of questions that were asked. Incidentally the questioning of the guides afforded an excellent opportunity for the more technically minded fans to demonstrate their knowledge of railroad and locomotive lore to their less well informed companions. Keen interest was manifested in locomotives in the enginehouse that were in various stages of repair, on some of which external parts had been removed to disclose the mechanism on the interiors of the steam chests, cylinders, smoke boxes, etc. Much curiosity was manifested in the turntable, which, with a locomotive spotted on it, was kept almost constantly in motion. Here again cameras were much in evidence. Following the inspection at Ft. Wayne, the excursionists, by now thoroughly saturated with railroad lore, boarded the train for the final lap of the journey.

At this point the tempo of the excursion suddenly quickened. Whereas the trip to Ft. Wayne had been made leisurely, on the return trip, which it had been advertised would be made on the schedule of the Detroit Arrow of the Pennsylvania, the passengers were introduced to the present-day conception of speed as applied to railroad passenger trains. Drawn by two K-4S (heavy Pacific) engines, which had been substituted for the lighter equipment at Ft. Wayne, the train traveled 141

miles to Englewood Station, Chicago, in 1 hr. 52 min., an average of 75 miles per hour, thus exceeding the schedule of the Detroit Arrow by 3 min. During this phase of the excursion cameras were set aside in favor of timepieces and many of the passengers "clocked" the train, eagerly watching for mile posts and comparing the results of their observations.

Luncheon, at $1, and short orders were served in the diners, while sandwich, beverage and dessert service was available throughout the train.

An interesting sidelight of the trip was the brief stop made at Liberty Mills, Ind., a small town which is celebrating its one-hundredth anniversary. At this point the passengers manifested keen interest in an old covered bridge located about a quarter of a mile from the railroad tracks and many of them took advantage of the stop to photograph and inspect the structure at close range. At this stop, as at all others made on the trip, it was noticeable that the passengers, becoming deeply interested in their surroundings, were reluctant to return to the train, and it was necessary to resort to insistent sounding of the locomotive whistles to remind them that time was limited.

The passengers on the trip were largely men and boys, although there was a generous sprinkling of women in the group. While the majority appeared to have a deep and genuine interest in railroads, it was evident that not an insignificant number of them made the trip simply for the outing and the change of scenery that it afforded. Curiously enough, the group included about 15 employees of the Pennsylvania, each of whom paid the full fare for the privilege of taking the trip.

That the interest of the passengers was sustained to the last was evidenced by the fact that many of them, after the train had arrived at the Chicago Union Station, gathered about the locomotives to obtain the autographs of the engine crews.

I. C. Employee Training Program

(*Continued from page 518*)

sessions, the first comprising a lecture on some technical feature of railroading while at the second session Dr. Bruce will direct a classroom discussion of the points covered in that lecture and in the one on fundamentals delivered the preceding evening.

This training program is an outgrowth of an apprenticeship course which has been conducted in the traffic department for the last five years with satisfactory results. The program was developed by C. C. Cameron, vice-president in charge of traffic, in co-operation with Dr. Charles M. Thompson, dean of the College of Commerce and Finance of the University of Illinois, and Dr. Thor W. Bruce, assistant to the dean, who wrote the syllabus for the course. In the beginning the plan contemplated no other students than traffic department apprentices and beginner employees, numbering about 50 young men, but as the program assumed shape demands from other departments became so great that the program was expanded to permit the enrollment of all employees. The lectures of the course are divided into two general classifications—one a series to be delivered by professional educators on textbook subjects, the other a series on technical phases of railroading by officers in the Illinois Central's own organization. Classroom discussions will follow each lecture.

The first session was held on October 2 in the auditorium of the International House of the University of Chicago. Dean Thompson described the purpose of the course, while L. A. Downs, president of the Illinois Central, and other officers expressed the willingness of the management to assist employees in improving themselves and the railroad. Succeeding lectures will be given in the theater of the Chicago Women's Club, near the main office building and Central station.

The lectures, to be given by professional educators on Fridays, will include the following subjects: Essentials of Co-operation, Effective Public Speaking, Effective Salesmanship, Marketing Principles That a Railway Employee Should Know, Business Letter Writing, Personality and Civic and Community Responsibilities. Each of these will be discussed by a speaker drawn from some university. Those who have already accepted invitations to speak in this series are Professor Fred H. Russell, Professor C. R. Anderson, Professor Paul Converse, Dean Thompson and Assistant Dean Bruce, all of the University of Illinois.

The subjects which Illinois Central men will discuss on Saturday mornings will cover several phases of railroad operation, with traffic matters dominating the program. The history, geography and organization of the System will be discussed on the first three Saturdays of the course, while the functions of each department of the railroad will be described later in the course. Among the freight traffic subjects to be discussed are tariffs, the Chicago switching district, trap doors and peddler cars, rates and transit on grain and products, cotton handling, procedure before commissions, movement trends of major commodities and perishable traffic.

Communications . . .

The Railway Age cannot publish letters from readers who do not supply their names and addresses. Names of correspondents are not published, or disclosed even upon inquiry, unless the correspondent consents. But they must be given us as an evidence of good faith.

Riding Qualities of Passenger Cars

To the Editor:

Dr. Giesl-Gieslingen has done the railroads excellent service in reopening the subject of riding comfort.* The following notes on observations and experiments may be of interest in this connection.

The formula he gives for frictional resistance is the one given by M. Georges Marié.† It is not based on an exact theory; and, although it is useful for some purposes, it does not correctly represent the influence of friction through a complete cycle. Tests indicate that the coefficient of friction is reduced in the region of the reversal of motion. For example, a lubricated double-elliptic spring, loaded to 16,250 lb., showed a distinct increase in height on the removal of only 250 lb. It is probable that in very rapid oscillations friction is less throughout the cycle than is shown by static tests.

Apparatus that was applied to record simultaneously the relative motions of the equalizer, the truck frame, and the car body, on a car having stiff, dry bolster springs, showed that the bolster spring was constantly functioning with an amplitude about twice that of the equalizer springs. At least two rates of vibration can usually be perceived. They are so combined in all relative phases that the oscillation curve shows an ever-changing wave form. The fastest of these are too rapid to account for even by assuming that the bolster springs are inactive.

The explanation of these rapid vibrations is suggested by Karl Arnstein in his description of the trucks of the "Comet,"‡ where

* *Railway Age*, August 8, 1936.
† Traité de Stabilité du Matériel des Chemins de Fer.
‡ Mechanical Engineering, September, 1935.

he says, "It is therefore favorable to reduce the truck-frame weight and to soften the journal springs without coming into the critical range or permitting too much roll."

The diagram submitted by Dr. Giesl-Gieslingen shows the effect of the rapidity of the oscillations. It shows, for example, that three oscillations per second, of about one-eighth inch amplitude, are no more noticeable than five oscillations of about 0.022 in. amplitude. The frequency depends on the initial deflection, the formula for which is

$$d = \frac{K\, l^3\, P}{t^3\, w\, n}, \text{ where}$$

d = the deflection
K = a constant
l = the length
P = the load
t = thickness of the leaves
w = the width of the leaves
n = the number of leaves

With the load and stress fixed, any change in any one of the factors involves change in at least one other, and all factors except the width of the leaves are also factors in the relative friction formula. The designer generally has but limited control over the width and must depend mostly upon adjusting the other factors to get the desired initial deflection. According to formula, these changes increase friction. For example, a decrease in the thickness of the leaves necessitates an increase in their number, according to formula increasing the friction. But commonly, if not invariably, increase in initial deflection obtained by decrease in the thickness of the plates, and increase in the number of them, adds to riding comfort.

A computation of the coefficient of friction from the results of tests of a large number of springs shows a trend toward a decrease with thinner leaves. Probably, however, the springs with the thinner leaves were fitted better. The whole subject of friction in springs—the effects of varying dimensions, periodicity, fitting, kind of lubricant, length of service—needs investigation. Perhaps it may become customary eventually to specify a limit of friction in making purchases.

Before adopting the Swedish truck illustrated in the article referred to, American engineers should consider these features. The substitution of a semi-elliptic spring for a full elliptic one of the same sizes of leaves halves the deflection. The bolster spring shown is a single one, since it is impracticable to use such a wide bundle of springs as are common in American trucks. The thickness of the leaves, then, must be sufficient not only to make up for the length, but also for the narrowness. As the thickness is a factor in the formula for friction, it is hard to see any advantage in the long, narrow, semi-elliptic bolster spring.

Certainly we should not be satisfied with the present American truck. A better one must be possible to design when all the principles are understood. The following requirements are suggested: (1) High initial deflection, with some obvious limitations, (2) minimum weight of truck frame and attached parts, (3) minimum friction consistent with sufficient deflection and damping.

A long wheelbase spreads the springs supporting the truck frame and reduces its angular oscillations. No other benefit of long wheel base is apparent. G. E.

The Mechanical Engineer in Railroading

Chicago, Ill.

To the Editor:

There was a time when railroading was a profession that required more than anything else, the ability of men to get things done regardless of the efficiency with which they were done. It was the era of the pioneers that built and operated railroads under many difficulties of various kinds, difficulties which, to overcome, required much brawn as well as brain. It was the era of venturesome men in railroading, who had the opportunity of accomplishing gratifying economic results for themselves or the capitalists who hired them.

Ever since it came to pass that the people of the nation, of the states, counties and cities began to regard railroads as public utilities, insisted upon meddling with private initiative and determined to curb the capitalist in obtaining fullest fruition from his venture; ever since it came to pass that railroad labor organized itself into a self conscious and aggressive group, the railroad business has passed into a new phase. The economic advantage which the monopoly of rail transportation gave to the early railroaders is, moreover, fast vanishing before the onslaught of competition by other means of transport.

In view of this change in the conditions under which railroads now have to operate and still have to try to pay a return upon privately invested capital, would it not be well for railroad managements to reconsider the part which they might give to the mechanical engineer. The latter is, by his training, competent to add something valuable to the solution of mechanical department problems, of some of the operating, and of some of the purchasing problems.

By mechanical engineer is here meant, not the man who happened to go through a technical school, who promptly forgot his physics and mathematics, and who, not being by temperament and personality fitted for introspective analytical work, used his mechanical engineer's degree as a stepping stone to become a salesman, an operating man or an executive. By mechanical engineer is here meant the man who loves mechanical engineering as such, develops himself in it to a high degree, and thus becomes most competent in analyzing technical problems, of design, of strength of materials, of possible operating results. Such men become introverts by their avocation, even if they are not born that way. They are thinkers and not doers, and they have to be used and respected as thinkers. The executive and managerial type of railroad men often refers to them as "pencil or slide rule pushers," and this designation is largely characteristic of the little esteem in which this type of technically trained man has been held in railroad organizations.

On several occasions in the past, the chances for advancement of the technical man on railroads were freely discussed in these very columns, and a review of the opinions then expressed by "evidently practical" railroad men, distinctly shows how little the value of trained engineering brains for the improvement of the railroad industry is really appreciated. As pointed out above, it is easily understood why the early railroaders had no use for introspect types, or for men of outspokenly analytical faculties. Their railroads had plenty of money that they spent freely with the railway supply industries, which latter furnished the engineering brains and research activities: as a result thereof, it created institutions whose advice the practical railroader accepted without questioning.

But, as the railroad business became harder and harder, as expenditures had to be more and more closely scrutinized, and as, at the same time, cars, locomotives, and shops became more complicated operating instruments as a result of having to take advantage of advanced engineering, the relations between the railroads and the railway supply industry also became more complicated, and the railroads had to develop, more than before, within their own organization, the critical faculties which alone make purposeful and intelligent buying possible, which make it possible to separate the wheat from the chaff, as it were, in selecting for the most economical operation of the roads, designs and devices, from among those that were plentifully offered in free competition, which had the greatest intrinsic engineering value.

Considering the public utility character of the railroad transportation industry, and the supreme need for highest efficiency, there seems to be too great a complexity of the mechanical picture. Apparatus and methods that are freely endorsed by the mechanical departments of some railroads, are just as freely rejected by those of others, and for years efforts at standardization have encountered stubborn opposition. Opinions and impressions on the part of the managerial type of executive have over-shadowed fact findings on the part of the "pencil pushers." This condition of affairs has been both a boon to the railway supply industry, inasmuch as it stimulated a vast competitive effort in creation, and an expense to the railroads insofar as this competitive effort has increased the costs of the railway supply manufacturers.

The creation of a research organization by the A.R.A. is most timely. The railroads will however benefit from it only in the measure in which they admit to their councils competent engineers capable of judging the import of the various results of systematic research.

Researcher.

NEWS

Eight Months Railway Net a Return of 2.3 Per Cent

$364,697,978 an increase of 38.2 per cent over last year. August net up 53.4 per cent

Class I railroads in the first eight months of 1936 had a net railway operating income of $364,697,978, which was at the annual rate of return of 2.30 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics of the Association of American Railroads. This was an increase of 38.2 per cent as compared with the first eight months of 1935, when the net railway operating income was $263,852,503 or 1.66 per cent on the property investment. In the first eight months of 1930, net railway operating income was $556,466,258 or 3.45 per cent. Operating revenues for the first eight months of 1936 totaled $2,573,257,647, compared with $2,204,833,031 for the same period in 1935, and $3,615,795,956 for the same period in 1930, an increase of 16.7 per cent in 1936 over 1935, but 28.8 per cent below 1930. Operating expenses for the eight months amounted to $1,916,048,550, compared with $1,699,321,769 for the same period in 1935, and $2,732,817,443 for the same period in 1930. Operating expenses for the eight months were 12.8 per cent greater than in the same period of 1935, but 29.9 per cent under 1930.

Class I railroads in the first eight months of 1936 paid $204,542,689 in taxes compared with $161,711,951 in the same period in 1935, and $243,817,706 in the same period in 1930. For the month of August alone, the tax bill amounted to $27,963,417, an increase of $7,458,445 or 36.4 per cent over August, 1935.

Twenty-two Class I railroads failed to earn expenses and taxes in the first eight months of 1936, of which eight were in the eastern district, three in the southern district and eleven in the western district.

Class I railroads for August had a net railway operating income of $64,680,717, which, for that month, was at the rate of 2.28 per cent. This was an increase of 53.4 per cent over August, 1935, when the net was $42,156,706, or 1.48 per cent. In August, 1930, it was $96,017,672, or 3.33 per cent. Operating revenues for August amounted to $350,584,820, compared with $293,989,543 in August, 1935, and $466,442,467 in August, 1930. Operating expenses in August totaled $246,299,475, compared with $221,353,466 in August, 1935, and $327,250,055 in August, 1930.

Class I railroads in the eastern district for the eight months had a net of $228,596,865, at the rate of 2.91 per cent. For the same period in 1935, their net was $182,334,828, or 2.32 per cent, and for the same period in 1930 it was $304,518,751, or 3.92 per cent. Operating revenues in the eastern district for eight months totaled $1,306,148,559, an increase of 15.3 per cent, compared with 1935, but 28.1 per cent under 1930. Operating expenses totaled $932,597,722, an increase of 12.3 per cent above the same period in 1935, but 31.3 per cent below the first eight months of 1930. Class I railroads in the Eastern District for August had a net of $34,493,095, compared with $22,542,746 in August, 1935, and $44,581,813 in 1930.

Class I railroads in the southern district for eight months had a net of $45,094,522, at the rate of 2.22 per cent. For the same period in 1935, their net amounted to $29,671,029, at the rate of 1.45 per cent, and for the same period in 1930 was $54,492,644 or 2.56 per cent. Operating revenues in the southern district for eight months amounted to $320,461,209, an increase of 15.1 per cent compared with the same period of 1935, and a decrease of 27.5 per cent under 1930. Operating expenses totaled $243,265,062, an increase of 9.3 per cent above the same period in 1935, but 30.7 per cent under 1930. Class I railroads in the southern

(*Continued on page 533*)

CLASS I RAILROADS—UNITED STATES

Month of August

	1936	1935	1930
Total operating revenues	$350,584,820	$293,989,543	$466,442,467
Total operating expenses	246,299,475	221,353,466	327,250,055
Taxes	27,963,417	20,504,972	32,185,421
Net railway operating income	64,680,717	42,156,706	96,017,672
Operating ratio—per cent	70.25	75.29	70.16
Rate of return on property investment	2.28	1.48	3.33

Eight months ended August 31

	1936	1935	1930
Total operating revenues	$2,573,257,647	$2,204,833,031	$3,615,795,956
Total operating expenses	1,916,048,550	1,699,321,769	2,732,817,443
Taxes	204,542,689	161,711,951	243,817,706
Net railway operating income	364,697,978	263,852,503	556,466,258
Operating ratio—per cent	74.46	77.07	75.58
Rate of return on property investment	2.30	1.66	3.45

A.A.R. Proposes Class Rate Simplification

Seeks adjustment which will partially offset loss of surcharge on Dec. 31

Proposals for adjustments in the freight rate structure, to take effect upon the expiration, on December 31, 1936, of the emergency charges now in effect, have been practically completed by special committees representing the railroads, and were discussed with committees appointed by the National Industrial Traffic League and with representatives of both the anthracite and bituminous coal associations at a meeting in Washington on October 1.

These proposals, which will be submitted to the Interstate Commerce Commission and the various state commissions, do not contemplate that the increases authorized by the commission in Ex Parte 115, and now in effect, shall be carried into the freight tariffs. They represent an attempt on the part of the railroads, after a close study of the freight rate structure, to work out such adjustments, through increases and reductions, as will partially offset the decrease in revenues which otherwise will take place when the present charges expire at the end of this year.

As part of the general adjustment, the railroads contemplate an important step toward simplicity by making practically uniform for the entire country the classification of all articles now moving on first, second, and third class rates in less than car load lots in each of the three major traffic territories, Official, Western and Southern. This result is to be accomplished in practically all instances by making the ratings in all territories the same as the lowest classification now in effect in any territory. This is looked upon as the most important single step ever taken toward simplification and uniformity in the freight rate structure.

No general increases in the class rates will be proposed except that in official territory, and between official and western, where the rates are governed by the official classification the following changes are to be suggested:

Fifth class to be revised from 35 per cent to 37½ per cent of first class.

Sixth class to be revised from 27½ per cent to 30 per cent of first class.

The proposal on coal will follow in general the rates now in effect.

The railroads will ask that the proposed readjustments be made effective by January 1, 1937, to avoid the serious losses of much needed revenue which otherwise

would result from the expiration of the emergency charges allowed in Ex Parte 115. The revenue received from these charges now represents about one fifth the total net railway operating income. Railroad freight traffic is now moving in greater volume than at any time in the past four years but gross revenues in the first eight months of 1936 were still about 30 per cent below those for the corresponding period in 1930.

The studies do not in all cases include consideration of individual commodity rates which have been made to meet competition with other modes of transportation. The suggestions, therefore, are subject to the general qualification that, except where otherwise provided, commodity rates, not class or column rates, issued to meet truck or water competition and so indicated in tariffs, where not now subject to an emergency charge, need not be increased.

At present it is not contemplated that any change will be made in the rates on grain and grain products, except that in Central Freight Association territory it is proposed to consolidate grain by-products with the grain-products list at grain products rates. No change is contemplated in rates on livestock.

On coal, where the rate per ton is 75 cents or less the proposed increase is 3 cents per gross ton; where the rate is 76 cents to $1 the increase to be 6 cents; and where the rate is over $1 the increase to be 11 cents; except that rates within and to the West are to be increased from 3 to 10 cents per net ton and rates over $1 increased 15 cents per net ton. Rates on coal from Lake Superior and Lake Michigan docks to the interior by rail are to be increased from 3 to 11 cents per gross ton, and rates on lake cargo coal moving to the eastern ports of transshipment are to be increased 10 cents per net ton. Efforts are to be made to effect some arrangement, with the consent of the Interstate Commerce Commission, under which on lake cargo coal having a revenue road haul by rail beyond docks at Lake Michigan and Lake Superior ports, a single increase of 15 cents a ton shall be applied to the combined revenue of the rail lines both to the eastern ports and from the western ports. Rates on tidewater coal moving to the eastern ports of transshipment are to be increased 11 cents per gross ton. Efforts are to be made to effect some arrangement, with the consent of the commission, under which tidewater coal moved by rail from docks at the New England ports to destinations in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont will be subjected to a single increase of 11 cents per gross ton.

For iron and steel articles the proposed increase is 10 per cent with a maximum of 1 cent per 100 lb.

It is estimated that the proposed increases would produce about $50,000,000 of increased revenue per year, whereas the emergency charges have amounted to about $100,000,000 yearly.

Railroad Employment in September

Class I railroads reported to the Interstate Commerce Commission a total of 1,101,668 employees as of the middle of the month of September, an increase of 9.23 per cent as compared with the number in September, 1935, and an increase of 1.07 per cent as compared with the number in August, 1936. The number in the maintenance of way and structures group showed an increase of 11.79 per cent over last year, and the number in the maintenance of equipment and stores group showed an increase of 12.33 per cent.

Traffic Club of Pittsburgh

The Traffic Club of Pittsburgh will hold its annual dinner on Friday, January 22, 1937, advancing it from the evening of the first Thursday in March, on which date the dinners have been held heretofore.

Senate Committee Proposes Hearings in Railroad Finance Investigation

Chairman Wheeler of the Senate committee on interstate commerce, after a call at the White House on October 6, told newspaper men that public hearings in connection with the investigation the committee is making into the matter of railroad financial transactions will be started in November or December.

N. C. & St. L. Appeals Decision

The Nashville, Chattanooga & St. Louis has appealed a federal district court decision upholding a finding by the national railway mediation board that the railway employees' department of the American Federation of Labor is the legal representative for collective bargaining with the railroad under the railway labor act.

Traffic Clubs to Meet at Dayton

The fifteenth annual meeting of the Associated Traffic Clubs of America will be held at Dayton, Ohio, on October 13 and 14. Speakers at the meeting will include Cornelius Lynde, Interstate Commerce Counsellor at Chicago, and John L. Rogers, director of the Bureau of Motor Carriers of the Interstate Commerce Commission, while the dinner speaker will be Dr. William Mather Lewis, president of Lafayette College, Easton, Pa.

I. C. C. Orders Hearing on Hours of Bus Employees

The Interstate Commerce Commission has assigned for hearing at Washington on November 19 before Division 5 that part of the proceeding of investigation recently ordered as to the hours of service of motor carrier employees which pertains to employees of motor carriers of passengers, including those engaged in special or charter operations those engaged in operations over either regular or irregular routes, and those engaged in seasonal operations.

International Acetylene Association

The International Acetylene Association will hold its 37th annual convention at the Hotel Jefferson, St. Louis, Mo., November 18-20. The first day of this three-day meeting will be devoted to the opening luncheon, the general industries sessions and an oxy-acetylene welding and cutting forum. On the second day will be the heavy industries session and a round-table discussion on welding and cutting, while the third will be devoted to the annual luncheon and business meeting and the piping industries session.

National Motor Truck Show in Newark, November 3-7

The third annual national motor truck show will be held in Newark, N. J., opening on November 3, and continuing through November 7. Governor Hoffman of New Jersey has designated the week of the show as motor truck transportation week, and will issue a proclamation to that effect. A three-day transportational engineering meeting will be held in conjunction with the show.

Space has already been reserved by more than 75 motor truck and accessories manufacturers in the Newark Centre Market building, where the equipment exposition will be held. More than twice the space has been taken than was utilized for last year's show.

New York Railroad Club

The next regular meeting of the New York Railroad Club to be held on Friday, October 16, at 7:45 P. M. in the Engineering Societies building, 29 West 39th street, New York City, will be the first meeting since the summer vacation. At this meeting the subject will be: The Besler High Pressure Steam System. The speakers will include K. Cartwright, mechanical engineer, New York, New Haven & Hartford, who will talk on the conversion of two standard steel passenger coaches into a modern streamlined, air-conditioned, steam propelled train. George D. Besler and William J. Besler will describe the design of the high pressure steam system applied to the two-car New Haven passenger train. There will also be stereopticon and motion pictures at this meeting.

New York State Barge Canal Called Most Unjust Form of Competition

The Associated Railroads of New York State has recently distributed among employees of affiliated railroads a pamphlet setting forth "some of the facts" regarding the New York State Barge Canal System. This pamphlet contends that "of all the competition which the railroads of the Empire State must face, none is more unjust than that presented by the subsidized" barge canal.

The financial history of the canal is sketched with emphasis placed on the statement that "the total cost of the New York State Barge Canal from 1903 to date, including capital investment, interest maintenance and operation has exceeded $300,000,000, and yet at no time during that period have the people had an opportunity to vote on whether or not the prohibition against tolls should be removed from the Constitution, and reposed with the Legislature." The minimum annual overhead cost for interest and maintenance, borne by the taxpayers, is set up at $10,646,970—a situation wherein "Justice becomes a mockery when all the people of New York State must contribute

$10,000,000 in taxes every year in order that the few users of the Barge Canal may be enriched in the sum of $10,000,000 or more annually."

Attention is next called to the fact that up to date any attempt to let the people decide the question of tolls has been defeated and railroad employees are thus urged to support such constitutional-amendment resolutions as they come before subsequent legislatures.

Save-a-Day Service Established by I. C.

Save-a-day service, designed to afford first morning delivery at Memphis, Tenn., second morning delivery at New Orleans, La., and third morning delivery at Texas points, or one day faster than under previous schedules, was established by the Illinois Central on October 1. On the inaugural run a total of 29 carloads of merchandise were carried. The train leaves Chicago at 7:45 p. m., and arrives at Memphis, Tenn., at 8:35 a. m. the next morning, and New Orleans at 4 a. m. the second morning.

In order to provide for 7:45 p. m. departure time from Chicago, waybills are transferred by telegraph. Bills are completed after the train leaves Chicago and are placed on teletype machines which transmit them to Memphis so that they are available and the train worked immediately upon arrival.

Winterrowd to Address the Chicago Section, A. S. M. E.

The Transportation division of the Chicago section of the American Society of Mechanical Engineers will hold its first Fall meeting at 7:30 p.m., Thursday evening, October 15, at the Hotel Sherman, Chicago. The subject "Fighting Snow and Ice on the Railways" will be presented in an informal talk by W. H. Winterrowd, vice-president, Franklin Railway Supply Company. Lantern slides will be shown to indicate the various designs and methods of operating snow-fighting equipment from the largest rotary snow plows down to the smallest flange plows. Some of the slides will also show methods of cleaning large terminal yards of snow and ice. Mr. Winterrowd's talk will be based on personal experiences with snow-fighting equipment under the severe winter condition encountered on Canadian railroads.

Extension of Credit by Motor Carriers

Only shipper witnesses appeared at the hearing in connection with the Interstate Commerce Commission's investigation to determine rules and regulations to govern the extension of credit by motor carriers, which was held in New York on October 5. The session at which Examiner Coyle presided lasted less than an hour. The principal statements of shipper representatives were to the effect that bills rendered by motor carriers now require much checking and thus it was felt that the 15-day credit period allowed under the commission's order of July 8 should be continued temporarily for common carriers at least. Some suggested a 30-day credit period for contract carriers but other witnesses expressed their willingness to have applied to motor carriers the 96-hour credit limit now applied to railroads after time had been allowed for conditions in the motor carrier field to adjust themselves to such a routine.

Increased Car Loading Expected for Fourth Quarter

Freight car loading during the fourth quarter of 1936 are expected to be about 9.7 per cent above actual loadings in the same quarter in 1935, according to estimates just compiled by the Thirteen Shippers' Regional Advisory Boards. On the basis of these estimates, freight car loadings of the 29 principal commodities will be 5,603,186 cars in the fourth quarter of 1936, compared with 5,107,030 actual loadings for the same commodities in the corresponding period in 1935. Each of the Thirteen Shippers' Regional Advisory Boards estimates an increase in the loadings for the fourth quarter of 1936 compared with the same period in 1935.

The tabulation below shows the total loading for each district for the fourth quarter of 1935, the estimated loadings for the fourth quarter of 1936, and the percentage of increase.

Shippers' advisory boards	Actual loadings 1935	Estimated loadings 1936	Per cent increase
Allegheny	702,118	797,338	13.6
Pacific Coast	202,739	209,992	3.6
Pacific Northwest	184,018	208,363	13.2
Southeast	479,990	541,521	12.8
Southwest	329,393	357,045	8.4
Great Lakes	354,382	428,361	20.9
Atlantic States	533,072	597,663	12.1
Central Western	241,634	242,530	0.4
New England	108,260	113,966	5.3
Northwest	298,034	300,840	0.9
Mid-West	715,713	763,257	6.6
Ohio Valley	666,961	735,569	10.3
Trans-Missouri-Kansas	290,716	306,741	5.5
Total	5,107,030	5,603,186	9.7

An "Autumn-Leaf Excursion" from New York

The Pennsylvania announces another low-rate Sunday excursion; one to see the autumn scenery in the less familiar regions of New Jersey, the train starting from Pennsylvania station, New York, at 8:05 a. m., on October 11. Stopping at Newark, Elizabeth and Rahway, the train will travel by way of Perth Amboy to South Amboy, which was the original northern terminus of the Camden & Amboy, opened in December 1832, the first railroad line between New York and Philadelphia. At Jamesburg, N. J., the excursionists may see 300 ft. of the original track of the Camden & Amboy, still lying there on its stone foundations. From Bordentown, N. J., which originally was the southern terminus of the rails, the train will turn north to Trenton and thence along the east bank of the Delaware river, past Washington's crossing, where there will be a stop of a half hour. Thence to Phillipsburg, N. J., Martin's Creek, Pa., and through Delaware Water Gap to Stroudsburg, Pa. Here the train will stay 45 minutes, whence it will return to New York by way of Trenton.

Railway Fire Protection Association

The Railway Fire Protection Association (W. F. Hickey, president, New Haven, Conn.) will hold its annual meeting at the Congress Hotel, Chicago, on October 20 and 21. The tentative program calls for the usual statistical reports on Tuesday morning, October 20, followed by committee report on gasoline and gas pipe lines, by W. F. Steffens, chairman. Other subjects to be reported on by committees, with the name of the chairman in each case, are: Tuesday afternoon: shop plants, J. R. Peters; freight car heaters and refrigerator cars, P. A. Bissell; incinerators, P. A. Bissell; timber treating plants, E. M. Strauss.

Wednesday forenoon: Hand book committee, T. E. Chapman, Jr.; snow melting oil and handling of gasoline, J. E. Fraser; gasoline and electric trucks and Diesel engines, W. F. Steffens; merchandise in transit, W. S. Topping; locomotive fire hazards, W. A. Radspinner; stations and freight houses, T. E. Chapman, Jr.; cotton hazards, E. Williamson; fuel oil, W. A. Radspinner; storage of records, J. L. Rice.

Wednesday afternoon: Fire prevention week, with reports from all members; air conditioning, with discussion; affiliating with A. A. R. or N. F. P. A. Following these discussions there will be nine reports from special committees whose work is carried on jointly with other organizations: namely, A. A. R. motor transport; national fire waste council; N. F. P. A. dust explosions; N. F. P. A. field practice; N. F. P. A. gases; N. F. P. A. protection of openings in walls; N. F. P. A. arson law campaign; A. R. E. A.; N. F. P. A. fire proofing.

C. G. W. Employees Begin Strike Vote

A strike ballot among employees in engine and yard service of the Chicago Great Western was begun on October 3 to force the payment of awards made to employees by the National Railroad Adjustment Board for alleged violations of various contract rules. Earlier in the day trustees of the railroad filed a petition in the federal district court at Chicago assailing the labor board's ruling and asking the court to disapprove or approve the payment, which amounts to approximately $60,000. The compensation demanded arises from a rule which provides that where three continuous eight hour shifts are worked in continuous service, the first shift shall begin work between 6:30 a. m. and 8 a. m., the second between 2:30 p. m. and 4 p. m. and the third between 10:30 and 12 midnight. In the Kansas City terminal the railroad had started one shift at 1 p. m., which ended at 9 p. m., and another at 11:59 p. m., ending at 7:59 a. m., paying full eight hour wages for the shifts. Union rules require that when an employee is called for work he must be paid for eight hours, whether or not the full time is worked. The rules also provide that where two shifts are worked within the same 24 hours, time and a half must be paid for all over eight hours.

In the present case the unions contend that starting the afternoon shift at 1 p. m., instead of 2:30 p. m., technically required that employees work two shifts, despite the fact that the full time did not exceed eight hours. They demand eight hours' pay for the time from 2:30 p. m. to 9 p. m. and, since the first hour and a half, from 1 p. m. to 2:30 p. m., falls

within a second shift, employees should be compensated for a full eight-hour shift at time and a half, or 12 hours, making a grand total of 20 hours.

Literary Digest Poll on Railroads

That reduced fares will influence people to travel more by railroad and that most shippers route by rail is indicated by a poll conducted by The Literary Digest among 1,000 readers, selected at random from subscription lists, and 1,000 subscribers who could be identified as manufacturers. The results are as follows (323 replies or 32.3 per cent):

Question 1—Do you know that rail passenger rates have been reduced? 98.7 per cent answered yes.

Question 2—Will the reduction in rail passenger rates influence you to travel more by train? 76.4 per cent answered yes.

Question 3—Does the business in which you are engaged route its shipments of freight by rail? 61.9 answered yes.

9.6 per cent ship 25 per cent of their freight by railroad

4.6 per cent ship 35 per cent of their freight by railroad

11.1 per cent ship 50 per cent of their freight by railroad

19.5 per cent ship 75 per cent of their freight by railroad

14.4 per cent ship 100 per cent of their freight by railroad

1.8 per cent ship miscellaneous volume by railroad

42.1 per cent ship 50 per cent or more of their freight by railroad

31.8 per cent of the replies are from officials

18.5 per cent of the replies are from managers

12.6 per cent of the replies are from clerks

27.5 per cent of the replies are from manufacturers

10.0 per cent of the replies are from wholesalers

20.7 per cent of the replies are from retailers.

All of the percentage figures on each of the polls are based on the total number of replies from each of the polls.

Some of the percentage figures, when added together, do not total 100 per cent. This is due to the fact that there were no replies from certain ones, and, in the case of occupations (especially in the general list) there were a great many lawyers, judges, physicians, etc.

I.C.C. Asked to Investigate Southern Class Rates

The Joint Conference of Southern State Commissioners and Shippers, organized at a meeting at Atlanta, Ga., on September 3, with Jud P. Wilhoit as chairman, has filed with the Interstate Commerce Commission a petition asking for an investigation of the class rate structure now in effect in southern territory to the end that it may be revised downward "to remove the undue burden now resting on southern shippers of freight." Similar petitions were filed at the same time by seven state railroad or public service commissions and the Association of Southeastern Railroad and Public Service Commissioners and by the Southern Traffic League; also by a dozen or more chambers of commerce, traffic bureaus, etc.

The petition declared that the South suffers no natural handicap except remoteness from the principal markets and that this remoteness is exaggerated "by the maintenance of excessive and unreasonable class rates which bear no relation whatsoever to what are just and reasonable rates." It is asserted that these rates are largely due to the results of divergent traffic policies of the railroads and in part to the fact that the commission has permitted these traffic policies to be reflected in its decisions. The present class rates in the South, it is pointed out, resulted from the decision of the commission in the investigation started by the commission in 1920 which has since been used to a considerable extent as a basis for commodity rates by relating commodity rates by percentages to the first class rates.

The petition says that thousands of examples may be cited to indicate that the existing high levels of rates have actually retarded the movement of traffic and that the carriers have "tardily, in most instances," reduced rates on much of the traffic until to-day the class rate level is something of a fiction. "The present antique and obsolete structure," the petition declares, "should be replaced by something modern that will combine improved service with reduced cost."

C. P. R. Adopts Contributory Pension Plan

The Canadian Pacific's non-contributory pension system will be replaced as from January 1, 1937, by a new plan calling for contributions from eligible employees. The new system was made necessary, the President, Sir Edward Beatty, states by "changes in conditions" which have made it clear that "continuance of the present system would eventually impose upon the company financial burdens which it would be unable to bear."

The present system, financed entirely by the company, has been in effect since January 1, 1903. Consideration of a change has been under way for some time, the management seeking a system which would "give reasonable assurance that, in the absence of circumstances beyond its control, the payment of pensions upon the present scale may be continued."

A joint committee of company and employees' representatives worked out details of the new plan. Generally, it will adhere as closely as possible to the underlying principles of the present system, the announcement states, with other changes as are necessary "to meet altered conditions."

"It is hoped all those eligible will become contributors." Sir Edward declares. Employees, under the plan, would contribute 3 per cent of their earnings. While the fund is being built up, the company will continue to pay the larger part of pensions allowances. Since the non-contributory plan's inception in 1903, the railway has paid out $18,201,640 in pensions. Under the new plan rates of pension will be practically unchanged, and the pensioning age will be the same as it now is.

The plan embraces all branches of the company's services as well as subsidiary companies controlled and operated by the C.P.R. It will be administered by seven men, four of them company officers and the remaining three representing the organized employees.

Incoming and Retiring C. N. R. Heads Praise Its Employees

A tribute to the loyalty and spirit of service of the employees of the Canadian National was paid by President S. J. Hungerford in a message to the staff throughout the system in assuming also on October 1 the office of chairman of the board. Mr. Hungerford expressed the belief that through the joint efforts of the management and staff the system could be made of increasing value to the nation. After his tribute, he added:

"Service in any capacity with the Canadian National Railways should bring to those who accept it a deep sense of responsibility. The activities of the system, by reason of its size and its history, produce problems every day that call for concentrated and co-ordinated effort. The responsibility attaching to those tasks is deepened by the important factor that the well-being of the country and that of the Canadian National Railways are so closely related as to be inseparable. If this circumstance increases in some way the burden, it makes greater the opportunity to render important public service."

The retiring chairman, C. P. Fullerton, also addressed a message to the staff, stating that "it will ever be a source of gratification to me to recall the invariable loyalty and co-operation accorded the trustees and the faithful way duties were performed, often under difficult and trying conditions. These factors contributed in no small measure to the results attained during the administration of the trustees. As Chairman I have been closely in touch with all phases of the system's activities, and I have been impressed with the fine spirit and competency of all in the service."

The new board of directors, on October 1 supplanted the trustees, who formerly managed the property.

Number of Grade Crossings Reduced

Fewer highway-railroad grade crossings were in existence on January 1, this year, than on any similar date in the past ten years, the Association of American Railroads announced. On January 1, 1936 there were 234,231 highway-railroad grade crossings, a reduction of 8,578 compared with the number that existed on January 1, 1930, when there were 242,809, the greatest number on record. Since 1930 there has been a gradual reduction each year in the number of highway grade crossings.

Part of this reduction in recent years can be attributed to the program adopted by the government calling for the use of federal funds for the elimination of highway-railroad grade crossings as a means of promoting unemployment relief. Since 1933, 2,668 highway-railway grade crossings either have been or will be eliminated in the near future. The Bureau of Public

Roads of the Department of Agriculture estimates that by the time the present program has been completed, more than 3000 grade crossings will have been eliminated. Part of this work has been brought about by funds provided in the public works act of 1933 and the Hayden-Cartwright act while under the emergency relief appropriation act of 1935 $200,000,000 was set aside to be used for the elimination of hazards to life at grade crossings. From funds provided in the public works and the Hayden-Cartwright acts, 714 grade crossings separation projects have been undertaken, while from the $200,000,000 appropriated in the emergency relief appropriation act of 1935, 1,699 highway-railroad grade crossing projects either have been completed, are now under construction, or are to be constructed under plans already approved by the Bureau of Public Roads. In addition, federal funds are also being used for the installation of flashing lights and other protective devices at 868 additional grade crossings.

P. & S. Division Selects Committees

The Purchases and Stores Division, A. A. R., has announced the selection of subjects for study this year and a tentative list of the committee membership. Two new subjects, "Maintenance of Way and Construction Materials" and "Extension of Purchasing in Standard Packages," have been assigned to committees, the latter comprising 28 members organized in four territorial groups to assure a comprehensive analysis. New chairmen have been appointed for all standing committees with the exception of the Committee on Simplification and Standardization, and the Committee on Commissary Supplies has been replaced by a committee appointed by J. M. Symes, vice-president, A. A. R., to include representation of the dining car and accounting departments. The appointments to the new and reorganized subject committees are as follows:

Maintenance of Way and Construction Materials: Frank McGrath, traveling storekeeper, B. & M., chairman; C. A. G. Blomquist, stores accountant, C. of G.; C. M. Burpee, research engineer, purchasing department, D. & H.; K. P. Chinn, assistant general storekeeper, T. & N. O.; W. B. Hall, purchasing agent, D. & R. G. W.; J. L. Quarles, district storekeeper, C. & O.; W. P. Stewart, supervisor of scrap, I. C.; A. L. Sorensen, manager of stores, Erie, chairman ex-officio.

Extension of Purchasing in Standard Packages: W. A. Clem, purchasing agent, Reading, general chairman; A. G. Follette, general material supervisor, Penna, assistant general chairman. *Subcommittee A:* E. H. Hughes, general storekeeper, K. C. S., chairman; A. W. Blume, general storekeeper, St. L.-S. F.; H. Crouse, general storekeeper, T. & P.; W. F. Niehaus, assistant to purchasing agent, M-K-T.; L. L. Studer, district storekeeper, M. P.; C. L. Wakeman, general storekeeper, Wabash *Subcommittee B:* L. F. Duvall, assistant general storekeeper, A. C. L., chairman; John Carmichael, superintendent of stores, W. Md.; U. S. Cornelius, traveling storekeeper, Southern; Herbert M. Hobson, stockkeeper, L. & N. *Subcommittee C:* W. A. Clem, purchasing agent, Reading, chairman; W. C. Atherton, purchasing agent, P. M.; James Deery, assistant purchasing agent, Penna.; F. I. Foley, general storekeeper, N. Y., N. H. & H.; J. H. Geary, material inspector, Erie; J. S. Genther, general storekeeper, L. & N. E.; C. C. Hubbell, general purchasing agent, D. L. & W.; F. J. McGuinness, superintendent of stores, D. & H.; A. P. Pollard, traveling storekeeper, B. & M. *Subcommittee D:* L. L. King, assistant purchasing agent, I. C.; G. A. Goerner, general storekeeper, C. B. & Q.; W. C. Hunt, general traveling storekeeper, A. T. & S. F.; L. Kilmer, general storekeeper, G. T. W.; A. M. Lemay, inspector of stores, C. M. St. P. & P.; F. J. McMahon, general storekeeper, N. Y. C.; J. E. McMahon, assistant purchasing agent and general storekeeper, C. St. P. M. & O.; R. M. Nelson, purchasing agent, C. & O.

Supplies for Dining Cars, Hotels and Commissaries: W. J. Farrell, secretary, Purchases and Stores Division, A. A. R., chairman; A. F. Free, disbursements assistant, Accounting Division, A. A. R.; P. L. Grammer, assistant purchasing agent, Penna.; L. M. Jones, superintendent dining cars, C. M. St. P. & P.; L. P. Krampf, supply agent, M. P.

Material Classification: W. R. Culver, general storekeeper, C. St. P. M. & O.; Bouque, assistant to general storekeeper, S. P.; D. H. Reed, traveling storekeeper, Southern; W. S. Riach, chief clerk to general storekeeper, A. T. & S. F.; E. G. Roberts, chief clerk to general storekeeper, C. R. I. & P.; C. H. Murrin, general storekeeper, L. & N., chairman ex-officio.

Railroad Scrap: W. J. Sidey, supervisor scrap and reclamation, L. V., chairman; G. W. Alexander, general storekeeper, C. of G.; E. J. Becker, district storekeeper, S. P.; V. N. Dawson, district storekeeper, B. & O.; R. E. Hamilton supervisor reclamation, C. & O.; C. L. McIlvaine, assistant purchasing agent, Penna.; C. A. Malone, purchasing department, A. T. & S. F.; C. E. Reasoner, scrap supervisor, M-K-T.; J. C. Kirk, assistant general storekeeper, C. R. I. & P.; chairman ex-officio.

Joint Committee on Reclamation—P. & S. Div. Representatives: J. J. Collins, supervisor scrap and reclamation, Erie, chairman; I. C. Bon, superintendent reclamation, Wabash; E. R. Casey, superintendent reclamation, U. P.; T. J. Hegeman, superintendent scrap and reclamation, C. B. & Q.; E. W. Peterson, general storekeeper, Bang. & Aroos.; A. L. Prentice, manager, scrap and reclamation, N. Y. C.; J. C. Kirk, assistant general storekeeper, C. R. I. & P., chairman ex-officio.

Stock Reports and Store Expenses: M. E. Baile, assistant supply agent, M. P., chairman; O. L. Browne, assistant to purchasing agent, A. C. L.; S. A. Hayden, general storekeeper, M-K-T.; E. H. Landers, general storekeeper, N. Y. C.; J. F. Riddle, statistician, stores department, Penna.; W. L. Wheeler, assistant general storekeeper, C. & N. W.; O. A. Donagan, general storekeeper, B. & M., chairman ex-officio.

Forest Products: A. J. Neault, assistant general purchasing agent, C. & N. W., chairman; H. O. Bush, general lumber and tie inspector, Erie; D. R. Elmore, assistant to general manager, Fruit Growers' Express; W. S. King, tie and timber agent, C. & O.; L. W. Kistler, superintendent treating plants, St. L.-S. F.; E. H. Polk, assistant purchasing agent, S. P.; G. H. Robison, purchasing agent, U. P.; H. E. Warren, manager, purchases and stores, G. M. & N.; James Young, assistant purchasing agent, Penna.; C. C. Warne, purchasing agent, N. Y. C., chairman ex-officio.

Highway Motor Vehicles: C. E. Smith, vice-president, N. Y., N. H. & H., chairman; R. C. Harris, general storekeeper, Penna.; J. H. Lauderdale, general purchasing agent, M. P.; E. S. Jamieson, assistant general purchasing agent, U. P., chairman ex-officio.

Fuel: P. A. Hollar, fuel purchasing agent, Penna., chairman; Robert Collett, fuel agent, St. L.-S. F.; W. J. Hiner, fuel purchasing agent, N. Y. C.; A. E. Johnson, fuel agent, C. M. St. P. & P.; G. W. Leigh, purchasing agent, M. St. P. & S. S. M.; M. H. McGlynn, fuel agent, C. R. I. & P.; J. E. Mays, fuel agent, B. & O.; F. D. Rosebrook, fuel agent, C. & N. W.; G. E. Scott, purchasing agent, M-K-T., chairman ex-officio.

Forecasting Requirements: G. O. Beale, chief purchasing and stores officer, C. & O., chairman; C. D. Baldwin, purchasing agent, Bang. & Aroos.; Clyde Cocke, purchasing agent, N. & W.; T. A. Hodges, general storekeeper, S. A. L.; A. B. Lackey, division storekeeper, Southern; K. A. McDonald, chief clerk to purchasing agent; C. K. Reasor, assistant manager stores, Erie; W. F. Redman, traveling storekeeper, C. & N. W.; E. D. Toye, general storekeeper, C. N. R., chairman ex-officio.

Pricing and Inventory: C. B. Hall, stores manager, Penna., chairman; B. T. Adams, district storekeeper, I. C.; L. J. Ahlering, purchasing and stores agent, C. & E. I.; H. B. Akin, district storekeeper, C. N. R.; G. J. Hunter, traveling material supervisor, A. T. & S. F.; C. A. Nichols, assistant general storekeeper, N. P.; G. W. Scott, district storekeeper, M-K-T.; J. W. Watkins assistant to general storekeeper, L. V.; L. P. Krampf, supply agent, M. P., chairman ex-officio.

Purchasing Organization and Records: J. F. McAlpine, assistant purchasing agent, C. B. & Q., chairman; F. E. Driscoll, purchasing agent, Erie; J. W. Hagerty, general supervisor purchasing department, Penna.; C. B. Hanover, chief clerk to purchasing agent, C. M. St. P. & P.; J. H. James, purchasing agent, P. & L. E.; C. R. Painter, purchasing agent, N. Y., N. H. & H.; A. A. Taylor, assistant general purchasing agent, M. P.; M. L. Tynan, general purchasing agent, Railway Express Agency; G. T. Wickstrom, assistant to general purchasing agent, U. P.; E. M. Willis, purchasing agent, N. P.; E. J. Lammeck, purchasing agent, Penna., chairman ex-officio.

Stationery and Printing: B. B. Melgaard, assistant to purchasing agent, C. M. St. P. & P., chairman; H. C. Boldebuck, stationery buyer, C. B. & Q.; J. L. Gorsuch, stationer, W. Md.; W. W. Griswold, stationer, C. R. I. & P.; B. Kocher, stationery storekeeper, C. N. R.; O. B. Mills, stationery storekeeper, Penna.; G. E. Per-

rot, stationery supervisor, S. A. L.; J. T. Van Horn, stationer, M. P.; E. G. Walker, assistant general purchasing agent, A. T. & S. F., chairman ex-officio.

Fire Prevention: W. F. Sanford, district storekeeper, C. & N. W., chairman.

Material Handling: W. S. Morehead, general storekeeper, I. C., chairman; D. Corcoran, general storekeeper, C. & N. W.; J. U. King, general storekeeper, A. C. L.; A. S. McKelligon, general storekeeper, S. P.; H. E. Ray, general storekeeper, A. T. & S. F.; H. M. Smith, general storekeeper, N. P.; J. W. Wade, general storekeeper, N. & W.; E. W. Walther, general storekeeper, B. & O.; L. B. Wood, general storekeeper, S. P., chairman ex-officio.

Simplification and Standardization: A. G. Follette, general material supervisor, Penna, chairman; J. E. Conroy, district storekeeper, C. & N. W.; W. J. Dixon, supervisor material standards, M. P.; E. A. Ernst, traveling storekeeper, C. R. I. & P., W. M. Hinkey, district storekeeper, B. & O., J. L. Irish, assistant general storekeeper, U. P.; C. J. Irwin, purchasing agent and storekeeper, G. C. & S. F.; J. K. McCann, inspector of stores, C. B. & Q.; W. H. Morris, general storekeeper, Reading; G. P. Turner, division storekeeper, Reading; G. P. Turner, division storekeeper, Southern; C. B. Tobey, general storekeeper, L. V., chairman ex-officio.

Exchange of Surplus Material: F. D. Reed, purchasing agent, C. R. I. & P., chairman; F. S. Austin, assistant purchasing agent, N. Y. C.; W. J. Diehl, purchasing agent, M. & O.; U. K. Hall, general purchasing agent, U. P.; C. H. Kenzel, purchasing agent, E. J. & E.; R. D. Long, purchasing agent, C. B. & Q.; H. P. McQuilkin, assistant purchasing agent, B. & O.; A. W. Munster, vice-president, B. & M.; C. E. Walsh, general purchasing agent, Penna.; A. C. Mann, vice-president, I. C., chairman ex-officio.

Joint Committee on Inspection—P. and S. Div. Representatives: A. C. Mann, vice-president, I. C., chairman; E. A. Clifford, general purchasing agent, C. & N. W.; F. D. Reed, purchasing agent, C. R. I. & P.; G. H. Walder, purchasing agent, C. M. St. P. & P.; C. E. Walsh, general purchasing agent, Penna.

Material Guarantees: J. T. Kelly, general storekeeper, C. M. St. P. & P., chairman; J. L. Brown, purchasing agent, S. A. L.; E. A. Jones, purchasing agent, L. V.; I. H. Lance, general storekeeper, D. L. & W.; H. M. Rainie, purchasing agent, B. & M.; A. C. Simmons, purchasing agent, C. G. W.; M. E. Towner, general purchasing agent, W. Md.; J. L. Bennett, purchasing agent, C. of G., chairman ex-officio.

Stock Book Records Versus Stock Card Records: L. C. Thomson, manager of stores, C. N. R.; H. E. Ray, general storekeeper, A. T. & S. F.

Eight Months Railway Net

(*Continued from page 528*)

district for August had a net of $6,609,394, compared with $3,242,837 in August, 1935, and $5,848,822 in August, 1930.

Class I railroads in the western district for eight months had a net of $91,006,591, at the rate of 1.52 per cent. For the same eight months in 1935, the railroads in that district had a net of $51,846,646, at the rate of 0.86 per cent, and for the same period in 1930 it was $197,454,863 or 3.17 per cent. Operating revenues in the western district for eight months' amounted to $946,647,879, an increase of 19.3 per cent over the same period in 1935, and a decrease of 30.2 per cent under 1930. Operating expenses totaled $740,185,766, an increase of 14.5 per cent compared with the same period in 1935, but 27.7 per cent below 1930. For August alone the Class I railroads in the western district reported a net of $23,578,228, compared with $16,371,123 for the same roads in August, 1935, and $45,587,037 in August, 1930.

The Interstate Commerce Commission's Bureau of Statistics has also issued its advance summary of railroad revenues and expenses for August, showing an increase in freight revenue as compared with August, 1935, of 20.3 per cent, and an increase in passenger revenue of 16.2 per cent. In the eastern district freight revenue increased 22.4 per cent and passenger revenue 14.3 per cent. In the Pocahontas region freight revenue increased 23.2 per cent and passenger revenue 28.6 per cent. In the southern region freight revenue increased 21.1 per cent and passenger revenue 19.7 per cent. In the western district freight revenue increased 17.7 per cent and passenger revenue 17.7 per cent.

Construction

BALTIMORE & OHIO CHICAGO TERMINAL.—A contract has been awarded to the Ellington-Miller Company, Chicago, for the construction of a railroad-motor truck freight terminal on the east bank of the Chicago river at Fourteenth street, Chicago, at a total cost of about $300,000. The terminal building, which will be leased to the Keeshin Motor Express Company, will be 190 ft. by 500 ft. in dimensions and will be of brick and steel construction on concrete foundations. Principally of one-story construction, the structure will embody a three-story office building, 60 ft. by 190 ft., at one end.

BALTIMORE & OHIO - PENNSYLVANIA.—The elimination of the Chili avenue crossings of these roads in Rochester, N. Y., has been directed by the New York Public Service Commission. The crossings are to be eliminated by raising the grades of the railroads. The estimated cost of construction is $300,500 and the cost of land is estimated at $91,100. Of the 50 per cent share of the cost to be paid by the railroads, the commission ordered the B. & O. to pay 60.5 per cent and the Pennsylvania 39.5 per cent. The B. & O. is to prepare the plans and perform the work.

CANADIAN NATIONAL.—This road has received tenders for construction work on a new branch line through the northern Quebec mining area. The new branch will extend from Senneterre, 72 miles west of Taschereau on the National Transcontinental to Rouyn. The bids were for clearing the right of way, grading the roadbed, installing culverts for drainage, erection of trestles to carry the tracks over the larger drainage openings, and the construction of the sub-structures for the main bridges. There will be two important bridges. The track-laying work and ballasting will be done by the Canadian National with its own track forces.

CHESAPEAKE & OHIO.—This company is developing plans to extend six stalls of its roundhouse at Ashland, Ky, at a cost of about $48,000; it has also received bids on some of the work of raising the grade of track and riprapping embankment of roadbed, and anchoring track on selected portions of its James River line, between Richmond, Va., and Clifton Forge, to cost about $300,000.

MINNEAPOLIS & ST. LOUIS.—A contract has been awarded to the Ross & White Company, Chicago, for the construction of an automatic electric two-track locomotive coaling station at Olds, Iowa.

MISSOURI PACIFIC.—This company is contemplating the strengthening of the existing piers in its bridge across the Kaskaskia river at Roots, Ill., at a cost of about $30,000. The work is to be carried out by company forces.

NEW YORK CENTRAL.—A low bid submitted by the Duffy Construction Corporation, New York, of $36,426 covering the construction of maintenance of way building in the Peat street yards in connection with the elimination of the grade crossings of this road in Syracuse, N. Y., has been approved by the New York Public Service Commission, and the commission directed the railroad company to award the necessary contract and begin the work as soon as practicable. See *Railway Age* September 26, page 465.

NEW YORK CENTRAL.—A contract has been let to the Cold Spring Construction Company, Akron, N. Y., for the elimination of the grade crossing of the Alden-Crittenden county road just west of Crittenden station, N. Y.; a contract has been given to James Stewart & Company, Inc., New York, for remodeling superstructure of the elevated public highway, city structure No. 2, at West 70th street, New York City, and a contract has been given to Miller-Blyth, Inc., New York, for the construction of an addition to sub-station No. 6-A at Harmon, N. Y.

STATEN ISLAND RAPID TRANSIT RAILWAY COMPANY.—This Baltimore & Ohio subsidiary has authorized work on Staten Island, N. Y., including the elimination of the grade crossing at Jersey street, New Brighton. The Faircroft Engineering Corp., Brooklyn, N. Y., submitted a low bid of $118,761 to carry out this work. Bids will be received until 1 p. m. October 13 for the elimination of grade crossings, furnishing, fabricating and delivering structural steel at Jersey street, New Brighton, and at Chestnut avenue, Rosebank, to cost about $15,000 and bids will be received until 2 p. m. October 13 for the elimination of the grade crossings at Lynhurst and Chestnut avenues, Rosebank, and at Cedar avenue, Arrochar, to cost about $190,000.

Equipment and Supplies

1936 Equipment Orders Nearly Double 1935's

Orders reported in September for 29 locomotives, 3,100 freight cars and 30,000 tons of rail

Orders for 29 locomotives—24 for domestic service and 5 for export—and for 3,100 freight cars for domestic service were reported in September issues of *Railway Age*. Thus did last month's purchases bring 1936's totals to date in those two categories to nearly double the volume reported for the entire 12 months of 1935. And while September was the second successive month in which no domestic orders for passenger-train cars were reported, the 1936 purchases of this class of rolling stock were by the end of July equal to twice 1935's 12-month volume. In the market for rail the September orders for 30,000 tons made this year's tonnage more than 57,000 tons in excess of that placed throughout 1935.

During the first nine months of this year a total of 158 locomotives has been ordered, excluding power units for streamlined trains. This compares with 83 locomotives ordered throughout 1935 and is a better volume than that reported for the entire 12 months of any year since 1930, excepting 1931 and 1934 when 176 and 183 locomotives were ordered respectively. Also, in the 1936 business are orders for 122 steam locomotives or as many of this type as were ordered during the entire four-year period, 1932 to 1935. In addition there were outstanding on October 1 inquiries for 80 steam locomotives—67 for domestic service and 13 for export—and plans had been announced for the purchase of three others for domestic service.

The 3,100 freight cars ordered in September brought this year's total to date to 37,354, a figure which is but 44 cars short of being double the 18,699 freight cars ordered throughout 1935. This year's business in the freight car field, having for the past three months been in excess of that of any year since 1930, is now equal to 80 per cent of that year's total. In addition there have been 1936 export orders for 516 freight cars and there were outstanding at the close of last month inquiries for 2,400 freight cars—1,300 for domestic service and 1,100 for export.

Thus far in 1936 a total of 141 passenger-train cars has been ordered, exclusive of articulated units for streamlined trains. This situation, as stated at the outset, remains the same as it has been for the past two months. During the 12 months of 1935, 63 passenger-train cars were ordered while in only one year since 1930—1934 with its 388—have orders for more passenger-train cars been reported than have been placed during this year's first nine months. On October 1 domestic inquiries for 12 passenger-train cars were outstanding.

The 30,000 tons of rail ordered in September brings this year's total to date to 552,585 tons as compared with the 495,300 tons placed throughout 1935.

Domestic Equipment Orders Reported in Issues of the Railway Age in September, 1936

LOCOMOTIVES

Date	Name of Company	No.	Type	Builder
Sept. 5	Green Bay & Western	3	2-8-2	American Locomotive Co.
Sept. 12	Aliquippa & Southern	1	0-8-0 switching	American Locomotive Co.
Sept. 12	Toledo, Peoria & Western	6	4-8-4	American Locomotive Co.
Sept. 26	Birmingham Southern	5	Diesel-electric	American Locomotive Co.
Oct. 3	Atchison, Topeka & Santa Fe	1	4-6-4	Baldwin Locomotive Works
		1	4-8-4	
Oct. 3	Birmingham Southern	5	Diesel-electric	Electro-Motive Corp.
Oct. 3	Detroit & Toledo Shore Line	2	2-8-2	Lima Locomotive Works

FREIGHT CARS

Sept. 5	Maine Central	500	Box	Magor Car Corp.
		100	Gondola	Bethlehem Steel Co.
		150	Twin Hopper	Bethlehem Steel Co.
Sept. 12	Boston & Maine	750	Gondola	Bethlehem Steel Co.
Sept. 12	Missouri Pacific Lines (New Orleans, Tex. & Mex.)	200	Box	Mt. Vernon Car Manu. Co.
Sept. 19	Union Railroad Co.	100	Gondola	Ralston Steel Car
Oct. 3	Chicago & Eastern Illinois	500	Box	Gen. American Trans. Corp.
Oct. 3	Wabash	400	Hopper	Wabash Car & Equip. Co.
Oct. 3	Reading Company	200	Gondola	Company Shops
		200	Auto Box	

LOCOMOTIVES

PITTSBURGH & LAKE ERIE—See New York Central System.

THE UNION PACIFIC is inquiring for 20 locomotives of the 4-8-4 type.

THE WHEELING & LAKE ERIE is inquiring for 10 locomotives of the 2-8-4 type.

THE UNIVERSAL ATLAS CEMENT COMPANY, Chicago, has ordered one 600 h.p. Diesel-electric switching locomotive from the American Locomotive Company.

THE DETROIT & TOLEDO SHORE LINE ordered three locomotives of the 2-8-2 type from the Lima Locomotive Works. Through a typographical error, this was reported as two locomotives, in the *Railway Age* of October 3.

THE BALTIMORE & OHIO has started work on locomotive repairs in four of its principal shops. The reconditioning and repair of 100 freight locomotives are included in the program. To perform the specialized work of locomotive rehabilitation requires the return of 250 employees at Baltimore, (Mt. Clare), Md., 150 at Cumberland, 150 at Glenwood, Pa., and 175 at DuBois, a total of 725 employees.

THE NEW YORK CENTRAL SYSTEM is inquiring for 25 locomotives of the 4-6-4 type for service on the New York Central, and for 25 switching locomotives of the 0-8-0 type for service on the Pittsburgh & Lake Erie.

FREIGHT CARS

THE BETHLEHEM STEEL COMPANY is building in its own shops, 100 hopper cars of 70 tons' capacity.

THE KENNECOTT COPPER CORPORATION is inquiring for 240 light-weight flat-bottom, steel ore cars of 100 tons' capacity.

THE GULF, MOBILE & NORTHERN is inquiring for 100 gondola cars and 150 single sheathed box cars, with an alternate bid on 400 box cars, all to be of 50 tons' capacity.

THE NEW YORK, NEW HAVEN & HARTFORD plans to equip freight cars with cast steel side frames at a cost of $1,081,000, if permission to spend the money is granted by the Federal Court. This is in addition to the work on 2,500 other cars reported in the *Railway Age* of February 22, page 340.

PASSENGER CARS

THE CHICAGO, ROCK ISLAND & PACIFIC, subject to the approval of the federal district court and the Interstate Commerce Commission, will purchase six light-weight streamlined trains at a cost of approximately $2,500,000. See item on page 525 of this issue.

IRON & STEEL

THE LOUISVILLE & NASHVILLE has ordered 27,000 tons of rails from the Tennessee Coal, Iron & Railroad Company.

NEW YORK CENTRAL.—Bids have been received for 800 tons of steel for grade crossing elimination work at Rochester, N. Y.

LONG ISLAND.—A contract has been let to the American Bridge Company for 240 tons of steel for grade crossing elimination work at Smithtown, N. Y. Tully & Di Napoli, Long Island City, are the general contractors.

THE RAILROAD CREDIT CORPORATION made during the month of September two liquidating distributions of 1 per cent each, both payable on September 30. The two distributions returned to participating carriers a total of $1,470,828, of which $759,856 was paid in cash and $710,972 credited on carriers' indebtedness to the corporation. This brings the total amount distributed since liquidation began to $47,801,902 or 65 per cent of the emergency revenue originally contributed by the carriers. Of this total, $23,235,442 has been returned in cash and $24,566,460 in credits.

Supply Trade

The National Carbide Sales Corporation, New York, subsidiary of the Air Reduction Company, has changed its name to the **National Carbide Corporation.**

Leo N. Blago has been appointed field representative in the southeastern district for the **Copperweld Steel Company,** Glassport, Pa. Mr. Blago's headquarters are in the Hurt building, Atlanta, Ga.

S. M. Hunter, formerly sales manager of the Novo Engine Company, is now affiliated with the sales department of the **American Hoist & Derrick Company,** St. Paul, Minn.

The Gould Coupler Corporation, Depew, N. Y., has succeeded to and acquired the entire business of **The Gould Coupler Company.** No change is contemplated in policies, management or business operations.

The Linde Air Products Company, New York, a unit of the Union Carbide & Carbon Corporation, has opened a new district office at 2 Virginia street, Charleston, W. Va., with **A. R. O'Neal** as district manager.

Lewis W. Metzger, Jr., has been appointed sales representative of **The Baldwin Locomotive Works,** covering the southern railroads, formerly covered by the late William B. Keys. Mr. Metzger attended school in the East and, in 1913, entered the employ of The Baldwin Locomotive Works as a special apprentice. In May, 1917, he left Baldwin to serve as machine shop foreman with the Bethlehem Steel Company, leaving that position in July, 1919, to return to Baldwin. From March, 1920, until his present appointment, he has been engaged in sales work for both the Baldwin Locomotive Works and the Standard Steel Works Company, in Houston, Texas, Richmond, Va., and in the home office at Philadelphia, Pa.

Arthur S. Goble has been appointed manager of the Philadelphia district of **The Baldwin Locomotive Works,** relieving **Stewart McNaughton** who will devote his full time to his increasing duties as general sales manager. Mr. Goble graduated from the University of Illinois in 1904 and immediately entered the employ of the Chicago & North Western as assistant to the chemist and engineer of tests. In 1911, he left the railroad to enter into sales work for The Baldwin Locomotive Works, first in New York and later in Chicago. Between the years 1918 and 1932, Mr. Goble was district manager of the Baldwin office in St. Louis, Mo. For the next two years, he was vice-president of the Hanna Stoker Company, returning to Baldwin on June 1, 1934. From that date until his recent appointment, he has been engaged in sales work with headquarters in the home office at Philadelphia, Pa.

H. D. Whittlesey, first vice-president and director of sales and distribution, of the **Sherwin-Williams Co.,** Cleveland, Ohio, on October 1, was relieved of the duties of director of sales and distribution, and in future will devote his entire time to executive duties and to the further interests of this company's allied connections. Mr. Whittlesey has served the company nearly 50 years. He spent 17 years in

K. H. Wood

charge of the eastern business at Newark, N. J., returning to Cleveland in 1918 in charge of all sales. **A. W. Steudel** who was vice-president is now vice-president and general manager of the company. Mr. Steudel has wide experience in practically all the operating and executive branches of the business, particularly in industrial sales, dyes, chemicals, pigments and colors. **K. H. Wood** who has had territorial and division sales experience and for several years has been in charge of railway and marine sales, is now director of sales and distribution of the company.

William E. Crocombe, president of the **American Forge Division** of the **American Brake Shoe & Foundry Company,** and president of the **American Manganese Steel Company,** has also been elected vice-president of the **American Brake Shoe & Foundry Company** with headquarters in Chicago. Mr. Crocombe started in the steel business as an office boy under Don H. Bacon of the

William E. Crocombe

Minnesota Iron Company, the Minnesota Steamship Company and the Duluth & Iron Range Railroad Company. When these companies were consolidated with the United States Steel Corporation, Mr. Crocombe entered the employ of the Illinois Steel Company in the rail mill and open hearth departments at the South Works. In 1907 he entered the employ of the Lackawanna Steel Company at Buffalo, N. Y., and from 1909 to 1915 was employed by the Union Drop Forge Company at Chicago. In the latter year he organized the forge department of the Ajax Forge Company, now the American Forge Division of the American Brake Shoe & Foundry Company. In 1924 he was elected president of the American Forge Company, now the American Forge Division of the American Brake Shoe & Foundry Company, and in 1933 was elected president of the American Manganese Steel Company.

George H. Bucher who was elected executive vice-president of the **Westinghouse Electric & Manufacturing Company,** with headquarters at Pittsburgh, Pa., is also president and general manager of the **Westinghouse Electric International Company.** Mr. Bucher has been connected with the Westinghouse organization since September 1, 1909. After graduating from Pratt Institute, Brooklyn, N. Y., having taken courses in both steam

George H. Bucher

and machine design and also electrical engineering, he joined the Westinghouse Electric & Manufacturing Company at East Pittsburgh as a graduate student. In 1911 he was transferred to the export department at New York and in 1920 he was appointed assistant to the general manager of the Westinghouse Electric International Company; in 1921 he was advanced to assistant general manager; in 1932 to vice-president and general manager. In 1934 Mr. Bucher was elected president and general manager of the same company and in 1935 he was elected to vice-president of the Westinghouse Electric & Manufacturing Company. Mr. Bucher is a member of the American Institute of Electrical Engineers and other associations.

Herbert A. May, who was recently elected vice-president of the **Union Switch & Signal Company,** as mentioned in the *Railway Age,* September 19, was born at Watertown, Wis., on June 27, 1892. His parents later moved to Pittsburgh, Pa., where he attended high school. He later entered Staunton Military Aca-

demy, Staunton, Va., from which he was graduated in 1910. He then joined the Atlantic Refining Company at Pittsburgh, Pa., and was with this company for a number of years. Mr. May enlisted in the 28th Division, 107th Field Artillery in July, 1917. In March, 1918, he was commissioned first lieutenant, field artillery,

Herbert A. May

and was assigned as instructor to Camp Zachery Taylor, Louisville, Ky., and in March, 1919, was mustered out of service with the rank of captain. He then entered the employ of the Union Trust Company at Pittsburgh. In 1923 he became vice-president and treasurer of the Standard Gauge Steel Company, Beaver Falls, Pa., which was later merged into the Union Drawn Steel Company of which he was appointed assistant treasurer and elected a director, remaining with this company until December, 1930. He then went with the Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., as assistant to the president, which office he held until July, 1934, when he was elected vice-president of the Safety Car Heating & Lighting Company, from which he resigned when elected vice-president of the Union Switch & Signal Company. In addition, Mr. May is a director in a number of industrial and other corporations.

OBITUARY

George L. Walters, vice-president and treasurer of the Adams & Westlake Company, Chicago, died of a heart attack on October 1, while waiting at the Indian Hill surburban station of the Chicago & North Western for a Chicago-bound train. He had been with the Adams & Westlake Company for more than 40 years.

Charles F. Henning, a director and vice-president of the United States Gypsum Company, Chicago, died in Highland Park, Ill., on October 3, following injuries received in an automobile accident on October 1. Mr. Henning was born in 1881 and spent virtually his entire business career with the United States Gypsum Company. He came to the company as a construction engineer in 1908, following his graduation from Lewis Institute, and short periods of employment with other concerns. In 1916 he was appointed manager of the company's contracting department; in 1920, he was appointed assistant general sales manager, and in 1921 he was appointed general sales manager. Shortly after he was elected vice-president and a director.

Fred D. Kennedy, who has been connected with the Westinghouse Electric & Manufacturing Company in various capacities for the last 45 years, died on September 28, in the Homeopathic Hospital, Pittsburgh, Pa. Mr. Kennedy was born at Burgettstown, Pa., on January 20, 1870, and learned his trade as a machinist with the Morgan Engineering Company of Alliance, Ohio. He entered the employ of Westinghouse Electric & Manufacturing Company in January, 1893. At first he was engaged in installing electrical machinery in power stations particularly in connection with street and interurban railway systems. Later he was made superintendent of railway motor and locomotive work and was closely identified with important railway installations, such as the New York, New Haven & Hartford, the Chicago, Milwaukee & St. Paul, and the Pennsylvania electrifications. Mr. Kennedy was an authority on the mechanical details of railway and locomotive equipment and as such has more recently been attached to the staff of the general works manager in a consulting capacity.

Financial

CENTRAL OF GEORGIA.—*Receiver's Equipment Trust.*—The Interstate Commerce Commission has authorized the receiver of this company to guarantee $400,000 of series S equipment trust certificates bearing 4 per cent and maturing in 15 annual payments beginning 1937. The issue is authorized for sale at par plus a premium of $250 for the entire issue to Johnson, Lane, Space & Co. of Savannah, Ga.—the highest bidder.

CHESAPEAKE & OHIO.—*Preferred Stock.*—A stockholders' meeting will be held in Richmond, Va., on November 5, at which a vote will be taken on a proposal to authorize the issuance of preferred stock, by which earnings heretofore undistributed would be in part passed on to stockholders.

CHICAGO & NORTH WESTERN.—*Abandonment.*—Charles P. Megan, trustee, has applied to the Interstate Commerce Commission for authority to abandon the operation of trackage between Manning, Ia., and Harlan, 21.5 miles, and to operate over the tracks of the Chicago Great Western.

CHICAGO & EASTERN ILLINOIS.—*Equipment Trust Certificates.*—Charles M. Thomson, trustee, has applied to the Interstate Commerce Commission for authority to acquire 500 steel-sheathed 50-ton box cars and to issue 15-year 3½ per cent equipment trust certificates for 80 per cent of the amount. It is proposed to purchase the cars from the General American Transportation Company at $2,700 each.

GULF, MOBILE & NORTHERN.—*N. O. G. N. Bonds.*—The Interstate Commerce Commission has authorized the New Orleans Great Northern to issue $700,000 of first mortgage 5 per cent, series B, bonds to be delivered at par to the Gulf, Mobile & Northern in partial reimbursement for expenditures.

MISSOURI SOUTHERN.—*R. F. C. Loan Extension.*—The Interstate Commerce Commission has authorized the extension for one year of the time of payment of a loan of $33,000 by the Reconstruction Finance Corporation to this company which matured October 7.

PENNSYLVANIA.—*I. C. C. Examiner Recommends Against Acquisition of Truck Line.*—Grover L. Swink, of the Section of Finance of the Interstate Commerce Commission's Bureau of Motor Carriers, has recommended in a proposed report that the commission deny without prejudice the application of the Pennsylvania Truck Lines, Inc., for authority to acquire control of the Alko Express Lines, stating that the proposed acquisition by payment of $136,610, an amount approximately $85,769 in excess of the depreciated book value of Alco's physical property, would neither promote the public interest nor constitute a provident commitment of applicant's funds.

SOUTHERN PACIFIC.—*Acquisition.*—The Interstate Commerce Commission has authorized this company to acquire the Biola branch of the Fresno Traction Company extending from a connection with the Central Pacific at Biola Junction, Calif., to Biola, 8.7 miles.

SOUTHERN PACIFIC.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon the Yaquina branch, from Altree, Ore., to Yaquina, 7.26 miles.

SOUTHERN PACIFIC.—*Ferry Abandonment.*—The Interstate Commerce Commission has authorized this company and the South Pacific Coast Railway to abandon a ferry across San Francisco bay between San Francisco and Alameda, approximately 3 miles.

TEXAS & PACIFIC.—*Acquisition.*—The Texas & Pacific Motor Transport Company has applied to the Interstate Commerce Commission for authority to purchase a portion of the certificate rights of the Johnson Motor Freight Lines, operating between Abilene, Tex., and Big Springs, and of the Fort Worth Warehouse & Storage Company.

Average Prices of Stocks and of Bonds

	Oct. 6	Last week	Last year
Average price of 20 representative railway stocks..	57.78	55.71	34.10
Average price of 20 representative railway bonds..	84.46	83.13	72.20

Dividends Declared

Carolina, Clinchfield & Ohio.—$1.00, quarterly; Stamped Certificates, $1.25, quarterly, both payable October 20 to holders of record October 10.

Cleveland, Cincinnati, Chicago & St. Louis.—Preferred, $1.25, payable October 31 to holders of record October 8.

Richmond, Fredericksburg & Potomac.—7 Per Cent Guaranteed, $3.50, semi-annually; 6 Per Cent Guaranteed, $3.00, semi-annually, both payable November 2 to holders of record October 31.

Railway Officers

EXECUTIVE

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OBITUARY

Arthur L. Graburn, who retired on May 31, 1935, as fuel agent for the Canadian National at Toronto, Ont., died on September 25 at the Ontario Club, Toronto.

Frederick W. Brazier, retired assistant to the general superintendent of motive power and rolling stock on the New York Central, died on October 4 at his home in Forest Hills, N. Y. Mr. Brazier was born on November 15, 1852, at Boston, Mass., and received his education in grammar school and Comers Business College, Bos-

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ton. He entered railway service in 1877 as a carpenter on the Fitchburg Railroad (now Boston & Maine) at Boston, Mass., serving in this capacity and in that of assistant foreman until 1885, when he became general foreman of the car department of that road. From 1893 to 1896, Mr. Brazier was superintendent of the Chicago, New York & Boston Refrigerator Company at Chicago. He served as general foreman of the car department of the Illinois Central at Chicago from January to October, 1896, and then became assistant superintendent of machinery for that road. From 1899 to 1904 he served as assistant superintendent rolling stock for the New York Central & Hudson River (now New York Central) and from 1904 to 1920 was superintendent rolling stock for the New York Central. Mr. Brazier served as assistant to general superintendent motive power and rolling stock for the New York Central from 1920 until his retirement in 1932. He was past president of the Master Car Builders' Association.

George D. Ogden, assistant vice-president in charge of traffic for the Pennsylvania, with headquarters at New York, died on October 4 at his home in Homer City, Pa. Mr. Ogden was born on May 16, 1868, at Homer City and received his education at the Indiana Normal School and Washington and Jefferson College, Washington, Pa. He entered the service of the Pennsylvania in June, 1887, as freight and ticket agent at Homer City. From 1890 to 1901 he served successively as night yard clerk at Allegheny City, Pa.; transportation clerk in the superintendent's office, West Penn division; freight and ticket agent at Butler, Pa.; freight agent and yard master at McKeesport, Pa., and freight agent at Harrisburg, Pa. Mr. Ogden was appointed division freight agent at Altona, Pa., on January 14, 1901, and

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was transferred to the Buffalo and Allegheny Valley division at Pittsburgh in the same capacity on June 1, 1903. He was promoted to assistant general freight agent at Philadelphia on March 1, 1906, serving in that position until May 8, 1912, when he was further advanced to general freight agent. Mr. Ogden was appointed freight traffic manager, lines east of Pittsburgh, in May, 1916, holding that position under the United States Railroad Administration. At the termination of government control of the railroads on March 1, 1920, Mr. Ogden was appointed traffic manager of the Central Region, with headquarters at Pittsburgh, being transferred in that capacity to Philadelphia on October 24, 1923. On July 16, 1929, he was appointed to assistant vice-president in charge of traffic at New York and on August 15, 1931, was appointed vice-president for New England at Boston, Mass. On May 16, 1933, Mr. Ogden was transferred back to New York as assistant vice-president in charge of traffic, the position he held at the time of his death. In October, 1917, Mr. Ogden organized the Traffic Emergency Committee to devise methods for avoiding congestion of war materials. In December of the same year, at the request of the General Operating Committee, Eastern Railroads, Railway War Board, he organized the Export division of that committee, and when the name was changed to the Freight Traffic Committee, North Atlantic Ports, during federal control, he continued as chairman until June, 1918. On the latter date, upon the creation of the Exports Control Committee Mr. Ogden was chosen chairman of that committee. Mr. Ogden was a member of the Railway Club of Pittsburgh, the Traffic Club of New York and the Traffic Club of New England.

Tables of Revenues and Expenses of Railways begin on next left-hand page

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Edgar H. Major, who has been appointed superintendent car service of the Louisville & Nashville, with headquarters at Louisville, Ky., as reported in the *Railway Age* of September 26, was born on January 18, 1891, at Hopkinsville, Ky. He entered the service of the L. & N. on June 7, 1907, at Earlington, Ky., where he served successively as storeroom clerk, record clerk, yard clerk, chief clerk and cashier. In March, 1911, he was transferred to Hopkinsville as cashier, and in April, 1912, he was sent to Birmingham, Ala., as a clerk in the agent's office. In August, 1915, Mr. Major left the L. & N., to accept a position with another line, returning to the L. & N. in May, 1916, as assistant agent at Copperhill, Tenn. In March, 1918, he was appointed chief accountant in the East End agent's office at Cincinnati, Ohio, where he was later appointed chief clerk. On July 1, 1920, he was appointed assistant car distributor in the office of the superintendent of transportation at Louisville, later being advanced to car distributor and then to chief clerk in the same office. He was holding the latter position at the time of his recent appointment as superintendent of car service.

Edgar H. Major

TRAFFIC

H. N. Huse, division freight agent for the Norfolk & Western, has been appointed chief of divisions bureau, with headquarters at Roanoke, Va. The position of division freight agent has been abolished.

T. K. Earley, assistant general freight agent of the Denver & Rio Grande Western, has been promoted to general freight agent with headquarters as above at Denver, Colo., to succeed **B. W. Robbins,** who retired on October 1 after more than 46 years of service with this company.

Gayle W. Arnold, district freight agent for the Baltimore & Ohio, with headquarters at Cincinnati, Ohio, has been appointed manager of the commercial development department, with headquarters at Baltimore, Md. **John H. Hague,** district freight representative, with headquarters at San Francisco, Cal., has been appointed district freight agent at Cincinnati, succeeding Mr. Arnold.

G. S. Woodward, commercial agent for the Seaboard Air Line, with headquarters at Belle Glade, Fla., has been appointed district freight agent, with headquarters at West Palm Beach, Fla., succeeding **A. M. Baker,** who has been appointed district freight agent at Orlando, Fla. Mr. Baker succeeds **E. D. Mays,** whose appointment as assistant freight traffic manager at Tampa, Fla., was noted in the *Railway Age* of October 3.

Robert S. Wheeler, whose appointment as general traffic manager for the Railway Express Agency at New York was noted in the *Railway Age* of October 3, has had 34 years of experience in the express service. Mr. Wheeler went with the American Express Company in August, 1902, and was assigned to its accounting department. Four years later he was transferred to traffic work and subsequently became assistant to the traffic manager. During the World War period, when the express companies were merged into a single organization, Mr. Wheeler continued in that position. On March 1, 1929, when the Railway Express Agency succeeded the former operating company, he was appointed traffic manager, the position he held until his recent appointment as general traffic manager.

Robert S. Wheeler

C. F. Messenkopf, whose appointment as traffic manager for the Railway Express Agency at New York was noted in the *Railway Age,* of October 3, has been 34 years in the express service. He started as an office boy in the traffic department in April, 1902, and served in various positions until he was promoted to assistant to the traffic manager, later becoming the vice-president's assistant. After a few years in New York City operations, Mr. Messenkopf returned to the traffic department in August, 1923, as aide to the traffic manager's assistant and in January, 1929, he became assistant traffic manager, the position he held at the time of his recent appointment.

C. F. Messenkopf

ENGINEERING AND SIGNALING

W. H. B. Bevan, assistant district engineer on the Central region of the Canadian National, with headquarters at Toronto, Ont., has been appointed division engineer of the Montreal, (Que.) Terminals, to succeed **G. H. Frith,** who has been appointed office engineer at Toronto.

MECHANICAL

H. B. Hilliker, supervisor of floating equipment of the Delmarva division of the Pennsylvania, has been appointed superintendent of floating equipment for the New York Zone of the Pennsylvania and the Long Island, with headquarters at Jersey City, N. J., succeeding **W. R. Elsey,** who has been promoted to mechanical engineer of the Pennsylvania at Altoona, Pa.

W. F. Kiesel, Jr., since 1919 mechanical engineer of the Pennsylvania, retired on October 1 after an unbroken service in the equipment engineering department of that road of over 48 years. Mr. Kiesel's connection with railway rolling stock design has included the entire period of the inception and development of steel freight and passenger cars. He played an important part in the development of both classes of equipment on the Pennsylvania and, in the case of freight cars, on the rolling stock of all American railroads. During this same period the steam locomotive passed through a no less remarkable evolution in capacity, in economy and in refinement of mechanical design. In motive-power developments Mr. Kiesel's ideas, backed up as they were with the results of the liberal use of the Altoona testing plant, exerted an equally important and widespread influence. Two of the more recent developments with which his name is associated are the limited cut-off and improvements in the design of front-end drafting devices. A measure of his contribution to the advancement of the art in his field is the fact that he has been granted a total of 135 patents on improvements in design of, or devices for locomotives and cars.

William Frederick Kiesel, Jr., was born at Scranton, Pa., September 1, 1866. He was graduated as a mechanical engineer from Lehigh University in 1887. Prior to and in vacations during his college course he served an apprenticeship in the machine shops of the Lackawanna Iron & Steel Company. On graduation he was for a short time engaged in locomotive testing on the Lehigh Valley. Mr. Kiesel began his service with the Pennsylvania in 1888; he was first a draftsman, then chief draftsman, assistant engineer, and assistant mechanical engineer. He occupied the later position from 1902 until 1919 when

Continued on next left-hand page

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Turn the searchlight of practical experience on a few of the best of modern locomotives. Observe their operating results » » » This modern power moves heavier trains at higher speeds —it spreads operation costs over more tonnage » » » With traffic increasing—both passenger and freight—the opportunity for increasing net earnings is immense.

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Tables of Revenues and Expenses of Railways begin on next left-hand page

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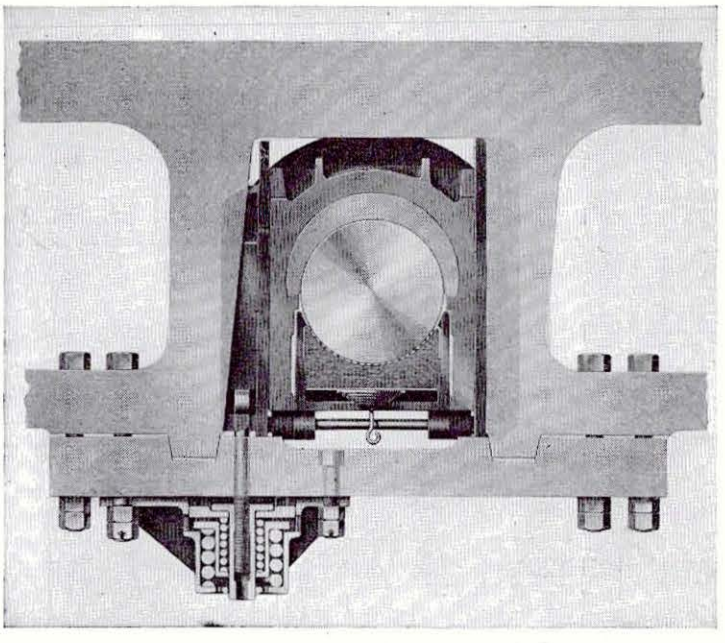
With a surface bearing, driving box temperature varies as much as 250° over short periods of time. Driving box size varies correspondingly.

No matter how perfectly the driving box wedge may be adjusted by hand, it is either too loose when the box is cold or too tight when the box expands. It cannot be right for both.

Franklin Automatic Compensator and Snubber automatically compensates for temperature change as well as wear. The wedge member automatically eases downward as the box expands and upward as it cools. The correct adjustment is always automatically maintained. The snubber member yields only to unusual shocks which avoids all possibility of excessive strains.



Like its twin, the Type E-2 Radial Buffer, it is one of the most effective devices in maintaining proper adjustment, easy riding and low maintenance costs.

When maintenance is required a replacement part assumes importance equal to that of the device itself and should be purchased with equal care. Use only genuine Franklin repair parts in Franklin equipment.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

Revenues and Expenses of Railways

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1936

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depr. & retir. 1936	After depr. & retir. 1935	Before depr. & ret.
Akron, Canton & Youngstown	Aug.	171	$171,624	$27	$181,317	$30,115	$15,704	$8,598	$52,929	$116,030	64.0	$65,287	$51,899	$35,180	$33,434	$39,610
	8 mos.	171	1,375,594	305	1,462,570	232,779	129,674	67,347	419,748	922,439	63.1	540,131	442,642	294,672	237,714	330,431
Alton	Aug.	956	1,068,106	189,178	1,429,863	344,512	186,912	50,904	499,078	1,129,040	79.0	300,823	220,911	34,768	—10,028	63,948
	8 mos.	956	7,757,079	1,360,371	10,463,641	1,683,314	1,704,429	385,890	4,060,772	8,296,135	79.3	2,167,506	1,485,873	85,830	—733,376	315,320
Atchison, Topeka & Santa Fe System	Aug.	13,227	11,108,034	1,604,682	13,808,750	2,208,828	2,948,377	397,377	4,535,116	10,468,061	75.8	3,340,689	2,017,317	2,061,998	1,733,078	3,006,129
	8 mos.	13,232	80,224,708	10,450,518	98,994,104	15,645,406	23,267,081	3,395,024	35,169,537	80,906,416	81.7	18,087,688	9,143,857	9,486,442	8,777,700	17,051,110
Atlanta & West Point	Aug.	93	112,821	26,567	158,485	19,662	36,018	8,036	59,297	133,888	84.5	24,597	17,665	853	—8,752	18,807
	8 mos.	93	799,075	181,192	1,151,419	150,401	235,724	64,824	476,750	1,005,444	87.3	145,975	90,026	—26,839	—67,073	46,236
Western of Alabama	Aug.	133	93,612	25,753	132,678	19,129	38,729	6,653	51,437	124,861	94.1	7,817	—915	—641	—12,203	12,536
	8 mos.	133	701,617	182,701	1,000,120	157,938	255,111	55,660	407,213	941,793	94.2	58,327	—10,943	2,097	—87,179	106,668
Atlanta, Birmingham & Coast	Aug.	639	258,398	13,957	301,577	41,631	50,344	21,514	100,459	237,329	78.7	64,248	51,154	38,945	1,440	48,415
	8 mos.	639	1,831,410	150,231	2,228,209	344,867	400,086	175,180	851,599	1,966,768	88.3	261,441	149,396	27,800	—69,624	120,320
Atlantic Coast Line	Aug.	5,108	2,204,160	393,498	2,912,166	381,476	664,167	114,783	1,222,980	2,504,262	86.0	407,904	232,904	273,737	5,441	448,501
	8 mos.	5,135	20,756,920	4,986,738	29,112,867	3,190,417	5,473,341	1,014,148	11,441,431	22,475,215	77.2	6,637,652	3,387,652	2,573,546	1,418,606	3,990,463
Charleston & Western Carolina	Aug.	342	170,837	2,035	177,349	23,644	27,894	6,245	56,727	120,241	67.8	57,108	35,108	30,768	6,984	36,990
	8 mos.	342	1,432,340	10,395	1,480,656	205,390	226,812	51,385	478,304	1,002,582	67.7	478,074	326,074	303,455	217,418	353,619
Baltimore & Ohio	Aug.	6,486	12,551,556	1,025,113	14,361,610	1,265,517	2,947,703	395,163	4,668,926	9,949,167	69.3	4,412,443	3,569,074	3,115,696	2,288,895	3,732,242
	8 mos.	6,486	94,690,742	7,336,760	108,363,172	9,611,782	25,365,527	3,100,400	37,226,994	80,749,135	74.5	27,614,037	20,931,697	17,743,576	14,744,417	22,669,439
Staten Island Rapid Transit	Aug.	23	45,874	82,848	138,852	15,154	21,687	2,354	83,102	134,355	96.8	4,497	—17,303	—29,932	—34,421	—22,516
	8 mos.	23	368,861	632,160	1,065,139	106,929	168,371	14,904	681,727	1,071,016	100.6	—5,877	—174,427	—292,652	—355,581	—233,331
Bangor & Aroostook	Aug.	603	206,957	15,777	239,142	89,817	75,738	5,331	89,984	285,604	119.4	—46,462	—66,621	—47,644	—80,553	—25,185
	8 mos.	603	3,607,689	151,654	3,920,524	766,327	697,392	43,046	1,045,709	2,742,727	70.3	1,177,797	790,670	780,788	1,202,926	958,754
Bessemer & Lake Erie	Aug.	225	1,758,613	2,815	1,775,469	122,163	270,249	13,317	227,421	663,004	37.3	1,112,465	874,873	924,907	485,208	992,418
	8 mos.	225	8,959,874	28,448	9,090,769	956,809	2,191,957	93,930	1,464,603	5,005,536	55.1	4,085,233	3,088,216	3,411,608	1,761,954	3,855,710
Boston & Maine	Aug.	1,988	2,634,205	697,948	3,853,547	461,815	512,582	76,377	1,470,820	2,700,035	70.1	1,153,512	874,476	703,701	504,469	839,765
	8 mos.	1,994	21,291,799	4,556,277	29,830,207	5,039,342	4,917,582	533,795	12,391,772	24,385,347	81.7	5,444,860	3,235,515	1,696,090	3,823,209	2,789,989
Brooklyn East. Dist. Term	Aug.	12.41	105,895	.....	108,500	8,590	11,025	250	29,419	55,325	51.0	53,175	44,292	44,323	35,915	.....
	8 mos.	12.41	835,610	.....	853,998	45,464	79,700	3,895	236,713	416,234	48.7	437,764	371,079	372,046	256,725	.....
Burlington, Rock Island	Aug.	255	48,332	7,411	60,855	21,953	12,198	4,111	35,071	80,245	131.9	—19,390	—26,925	—34,923	—34,452	—32,951
	8 mos.	255	434,007	42,366	517,318	126,649	97,324	30,774	295,652	609,113	117.7	—91,795	—148,988	—216,492	—263,667	—199,667
Cambria & Indiana	Aug.	37	114,915	.....	115,086	9,456	43,145	382	13,096	71,664	62.27	43,422	9,798	74,962	64,355	90,487
	8 mos.	37	797,748	.....	799,032	68,852	472,360	3,034	99,399	689,534	86.30	109,498	—69,690	483,606	588,623	609,398
Canadian Pacific Lines in Maine	Aug.	233	98,559	19,858	132,883	23,230	29,205	9,918	51,881	121,754	91.6	11,129	1,853	—10,972	—39,031	—8,894
	8 mos.	233	1,286,969	121,428	1,508,728	323,707	335,007	77,393	597,966	1,393,705	92.3	115,023	42,995	—119,681	—105,787	—103,167
Canadian Pacific Lines in Vermont	Aug.	85	63,794	11,811	89,437	15,371	20,705	4,407	52,547	98,917	110.6	—9,480	—17,282	—35,964	—39,244	—35,964
	8 mos.	85	502,852	68,758	663,752	158,838	212,376	34,475	457,648	908,500	136.9	—244,748	—301,605	—449,835	—336,145	—449,835
Central of Georgia	Aug.	1,926	1,027,537	136,624	1,278,965	172,891	273,223	52,658	509,136	1,087,812	85.1	191,153	87,965	91,603	124,235	155,645
	8 mos.	1,926	8,165,369	933,790	10,233,112	1,298,413	2,198,346	419,712	4,182,299	8,755,934	85.6	1,477,178	690,628	509,389	345,110	1,022,645
Central of New Jersey	Aug.	681	1,850,507	547,393	2,565,713	212,922	409,062	49,659	1,077,871	1,863,304	72.6	702,409	269,432	155,762	119,837	281,651
	8 mos.	681	16,199,468	3,098,039	20,594,133	1,606,242	3,947,623	381,649	8,817,629	15,679,849	76.1	4,914,284	1,974,162	865,426	1,935,340	1,884,193
Central Vermont	Aug.	453	426,224	46,152	508,472	108,242	119,456	14,584	237,782	502,858	98.9	5,614	—18,037	—122,130	51,891	—96,564
	8 mos.	453	3,247,669	262,258	3,826,791	732,849	790,123	116,014	1,899,351	3,722,065	97.3	104,726	—47,696	—149,654	236,847	65,866
Chesapeake & Ohio	Aug.	3,106	11,200,146	303,148	11,963,928	1,049,093	1,932,894	185,523	2,429,000	5,900,860	49.3	6,063,068	4,763,251	4,758,426	3,666,393	5,458,258
	8 mos.	3,106	81,180,929	2,211,563	86,434,686	8,264,113	15,554,790	1,522,549	18,653,989	46,537,394	53.8	39,897,292	31,244,511	31,446,579	23,524,010	37,059,273
Chicago & Eastern Illinois	Aug.	931	1,028,620	133,387	1,308,526	179,427	213,348	54,571	470,113	977,147	74.7	331,379	256,379	110,126	83,587	158,725
	8 mos.	931	8,127,211	863,812	10,195,637	1,205,269	1,772,249	443,006	3,899,645	7,823,246	76.7	2,372,391	1,772,391	632,425	148,220	1,026,380
Chicago & Illinois Midland	Aug.	131	279,148	1,179	289,268	26,454	48,422	16,150	70,566	178,143	61.6	111,125	79,046	86,198	89,387	99,807
	8 mos.	131	2,222,254	10,321	2,295,451	218,927	425,131	134,925	586,529	1,503,938	65.5	791,513	652,453	661,931	590,842	770,892
Chicago & North Western	Aug.	8,355	6,736,671	1,218,343	8,785,914	1,400,669	1,725,639	210,699	3,002,232	6,691,003	76.2	2,094,911	1,497,890	1,126,615	462,994	1,504,873
	8 mos.	8,355	45,933,800	7,158,557	59,187,735	10,925,456	13,845,636	1,401,029	23,494,027	52,366,415	88.5	6,821,320	1,842,923	161,644	272,380	3,456,520
Chicago, Burlington & Quincy	Aug.	9,021	6,933,595	881,091	8,659,037	1,271,570	1,401,520	221,242	2,860,558	6,104,262	70.5	2,554,775	1,855,891	1,378,009	1,413,640	1,758,781
	8 mos.	9,013	50,399,484	5,338,907	62,023,534	8,851,644	11,138,398	1,886,593	22,391,649	47,099,984	75.9	14,923,550	9,625,730	6,525,200	2,505,338	9,582,333
Chicago Great Western	Aug.	1,512	1,606,976	47,424	1,765,856	225,835	219,163	54,045	569,149	1,119,661	63.4	646,195	565,975	349,641	156,032	392,684
	8 mos.	1,512	10,588,451	371,211	11,743,837	1,761,339	1,635,205	424,591	4,475,107	8,714,259	74.2	3,029,578	2,418,945	918,656	89,512	1,251,760
Chicago, Indianapolis & Louisville	Aug.	572	726,890	50,046	868,245	93,456	213,496	27,355	334,419	702,213	80.9	166,032	127,810	32,567	—1,182	71,552
	8 mos.	572	5,525,299	396,600	6,652,897	628,884	1,607,976	227,304	2,620,895	5,363,952	80.6	1,288,945	973,396	150,522	—125,812	479,788

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INCORPORATED

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Revenues and Expenses of Railways

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1936—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depr. & retir. 1936	After depr. & retir. 1935	Before depr. & ret.
Chicago, Mil., St. Paul & Pac.	Aug.	11,128	$8,515,258	$773,691	$10,165,182	$2,185,362	$1,593,657	$231,731	$3,442,702	$7,797,231	76.7	$2,367,951	$1,630,951	$1,027,458	—$85,648	$1,472,581
	8 mos.	11,127	58,931,391	4,804,673	70,181,302	12,479,627	13,014,527	1,682,199	26,689,276	56,520,008	80.5	13,661,294	8,181,294	4,076,098	—64,993	7,656,259
Chicago, Rock Island & Pacific	Aug.	7,576	5,257,694	594,219	6,464,758	1,039,796	1,459,548	209,284	2,441,476	5,546,491	85.8	918,267	453,599	147,279	13,364	501,201
	8 mos.	7,575	39,041,397	4,525,126	48,310,563	6,537,412	11,682,710	1,587,742	20,394,675	43,332,902	89.7	4,977,661	1,279,550	—1,093,048	—1,551,657	1,769,030
Chicago, Rock Island & Gulf	Aug.	626	278,576	29,504	391,256	68,822	34,413	16,648	123,443	269,560	68.9	121,696	98,819	36,446	37,789	40,395
	8 mos.	626	2,038,346	220,424	2,873,260	442,782	278,776	128,820	1,018,899	2,078,734	72.3	794,526	617,241	190,588	—1,463	222,921
Chicago, St. Paul, Minn. & Omaha	Aug.	1,648	1,596,938	170,206	1,889,069	190,000	279,541	34,596	722,914	1,307,128	69.2	581,941	471,148	315,533	80,698	364,856
	8 mos.	1,648	10,083,135	1,068,617	11,996,981	1,408,168	2,070,252	282,804	5,642,893	10,027,199	83.6	1,969,782	1,155,963	254,419	—342,339	652,099
Clinchfield Railroad	Aug.	309	495,804	5,823	507,509	33,451	115,064	17,027	93,602	272,051	53.6	235,458	181,702	225,263	138,098	268,097
	8 mos.	309	3,913,419	36,069	3,992,908	309,787	927,748	139,294	788,248	2,280,424	57.1	1,712,484	1,339,559	1,640,432	1,147,450	1,987,840
Colorado & Southern	Aug.	956	558,291	58,499	675,693	99,884	117,031	13,258	243,006	509,215	75.4	166,478	100,022	69,167	52,141	100,595
	8 mos.	1,005	3,858,909	264,163	4,546,087	581,472	897,199	104,576	1,842,896	3,704,711	81.5	841,376	333,705	155,134	—169,578	407,939
Ft. Worth & Denver City	Aug.	902	443,168	68,571	516,530	52,507	75,785	17,949	154,520	337,462	65.3	179,068	143,540	107,746	81,898	125,053
	8 mos.	902	3,400,202	361,200	3,768,229	350,581	671,505	143,846	1,211,399	2,663,068	70.7	1,105,161	831,458	586,275	195,847	727,167
Columbus & Greenville	Aug.	167	93,834	8,214	107,479	16,417	16,651	3,887	36,357	83,045	77.3	24,434	19,280	16,785	5,798	19,570
	8 mos.	167	623,717	49,979	715,819	136,134	120,228	30,208	279,574	646,304	90.3	69,515	41,350	31,188	—24,160	53,523
Delaware & Hudson	Aug.	830	1,736,752	145,858	1,975,778	268,225	484,385	45,007	720,952	1,644,724	83.2	331,054	187,441	191,219	—97,229	281,558
	8 mos.	831	14,782,910	778,426	16,260,601	2,209,959	3,994,614	365,611	6,107,130	13,741,673	84.5	2,518,928	1,442,235	1,508,528	987,933	2,243,031
Delaware, Lackawanna & Western	Aug.	984	2,854,297	612,447	3,951,123	520,565	767,240	113,619	1,747,931	3,307,911	83.7	643,212	309,212	294,494	—341,636	516,313
	8 mos.	988	24,166,073	4,628,504	32,455,474	3,133,045	6,139,217	924,938	14,708,663	26,362,127	81.2	6,093,347	3,415,347	3,282,026	1,458,601	5,062,146
Denver & Rio Grande Western	Aug.	2,584	2,099,846	177,314	2,387,987	487,809	569,609	55,154	809,553	1,980,335	82.9	407,652	211,824	96,257	71,841	192,125
	8 mos.	2,584	13,524,098	1,001,767	15,299,933	2,718,854	4,450,754	422,854	5,309,545	13,471,256	88.0	1,828,677	321,753	—165,402	268,795	604,114
Denver & Salt Lake	Aug.	232	196,997	7,965	214,682	40,098	52,860	2,385	57,212	147,703	68.8	66,979	45,903	88,572	131,723	93,424
	8 mos.	232	1,451,785	63,208	1,584,718	289,401	522,183	18,470	435,405	1,292,014	81.5	292,704	131,561	449,686	637,094	490,820
Detroit & Mackinac	Aug.	242	70,537	4,209	81,702	13,557	13,268	776	23,389	54,216	66.4	27,486	24,886	21,687	12,112	24,552
	8 mos.	242	392,638	24,410	465,649	86,323	88,263	7,454	182,266	391,223	84.0	74,426	63,639	38,212	989	61,630
Detroit & Toledo Shore Lines	Aug.	50	233,600	.....	234,751	28,090	21,762	7,791	68,814	133,577	56.9	101,174	80,909	33,353	29,129	38,912
	8 mos.	50	2,545,389	.....	2,557,283	227,224	204,517	62,496	619,639	1,172,931	45.9	1,384,352	1,136,666	694,826	615,456	739,300
Detroit, Toledo & Ironton	Aug.	472	513,344	287	535,366	66,745	70,936	10,357	126,217	300,482	56.1	234,884	180,303	151,183	180,581	172,475
	8 mos.	472	5,133,900	1,998	5,262,713	499,560	655,626	84,703	1,112,162	2,551,369	48.5	2,711,344	2,184,933	1,884,395	2,262,438	2,058,045
Duluth, Missabe & Northern	Aug.	558	2,614,426	2,906	2,994,463	189,668	214,332	4,111	361,211	805,039	26.9	2,189,424	1,924,504	1,921,290	1,160,492	1,995,873
	8 mos.	559	9,807,023	20,477	11,231,961	1,150,278	1,687,891	30,369	1,920,834	5,150,849	45.9	6,081,112	4,731,931	4,727,163	2,967,729	5,326,314
Duluth, Winnipeg & Pacific	Aug.	178	111,927	2,931	119,121	24,436	16,173	1,789	41,365	88,148	74.0	30,973	22,687	4,892	—17,669	7,917
	8 mos.	178	860,855	16,906	901,673	200,789	144,140	14,406	362,734	756,721	83.9	144,952	83,513	—46,569	—122,690	—21,308
Elgin, Joliet & Eastern	Aug.	434	1,244,777	20	1,503,002	156,073	337,313	13,444	556,192	1,098,807	73.1	404,195	274,455	223,685	240,348	298,134
	8 mos.	434	10,346,688	34	12,016,485	1,122,206	2,581,267	110,330	4,277,843	8,454,874	70.4	3,561,611	2,575,025	2,335,390	1,744,571	2,934,679
Erie	Aug.	2,297	6,138,070	503,471	7,204,872	687,071	1,280,165	165,773	2,512,350	4,948,946	68.7	2,255,926	1,726,635	1,366,457	755,241	1,688,245
	8 mos.	2,297	46,749,008	3,544,145	54,420,737	4,667,395	10,240,850	1,353,107	19,898,885	38,586,341	70.9	15,834,396	12,181,030	10,061,103	7,200,473	12,661,339
New Jersey & New York	Aug.	45	13,889	45,270	61,318	5,758	15,792	698	46,250	70,272	114.6	—8,954	—14,222	—30,914	—37,233	—30,903
	8 mos.	45	127,582	381,792	524,998	40,790	121,975	5,084	389,597	572,023	109.0	—47,025	—85,805	—214,819	—291,294	—214,731
New York, Susque. & Western	Aug.	215	210,842	24,818	245,677	25,175	37,083	4,673	110,642	190,739	77.6	54,938	29,839	—6,004	—7,177	—444
	8 mos.	215	2,018,498	194,245	2,311,723	211,419	286,800	38,073	1,007,251	1,651,934	71.5	659,789	469,416	241,322	247,180	287,158
Florida East Coast	Aug.	712	272,324	90,820	406,582	105,237	135,625	19,603	164,671	470,627	115.8	—64,045	—142,759	—156,064	—282,358	—98,829
	8 mos.	712	3,636,791	1,738,905	6,027,941	809,838	1,047,764	179,583	1,926,097	4,400,373	73.0	1,627,568	999,361	662,057	61,817	1,120,840
Fort Smith & Western	Aug.	249	61,231	1,250	65,569	15,829	7,659	5,639	20,600	52,687	80.4	12,882	11,882	4,379	—6,720	4,945
	8 mos.	249	446,474	8,165	480,939	123,464	68,602	43,972	159,697	421,418	87.6	59,521	47,740	—6,823	—64,533	—2,279
Georgia Railroad	Aug.	329	265,535	20,120	306,769	31,804	60,600	17,547	124,886	248,147	80.9	58,622	52,281	62,658	47,776	73,827
	8 mos.	329	2,064,825	114,817	2,364,377	235,243	484,479	138,625	1,014,305	1,981,888	83.8	382,489	331,924	399,756	343,531	480,831
Georgia & Florida	Aug.	408	165,660	4,147	173,566	28,459	20,191	9,014	44,515	108,001	62.2	65,565	58,170	52,633	52,310	57,911
	8 mos.	408	736,237	20,122	787,429	188,226	137,057	67,107	286,563	724,350	92.0	63,079	9,482	—3,449	28,691	38,475
Grand Trunk Western	Aug.	1,032	1,398,063	98,520	1,626,701	308,515	338,315	35,188	685,527	1,442,559	88.7	184,142	84,074	—109,778	—10,141	—21,050
	8 mos.	1,032	14,117,739	603,408	15,833,101	1,947,257	2,946,707	282,992	6,151,815	12,021,390	75.9	3,811,711	2,951,441	2,115,178	1,262,728	2,868,609
Canadian Nat'l Lines in New Eng.	Aug.	172	102,349	11,499	123,532	38,692	15,777	2,436	56,935	123,517	100.0	15	—15,457	—38,478	—28,882	—35,476
	8 mos.	172	751,153	51,521	877,449	319,997	161,843	19,552	474,330	1,048,888	119.5	—171,439	—289,525	—502,018	—502,568	—478,181
Great Northern	Aug.	8,155	8,239,282	476,316	9,493,181	1,037,165	1,243,997	178,117	2,615,332	5,377,935	56.7	4,115,246	3,230,938	3,129,508	2,805,909	3,432,480
	8 mos.	8,220	47,345,050	3,347,681	55,420,218	5,779,091	9,253,873	1,438,716	18,392,712	37,083,430	66.9	18,336,788	13,256,364	12,649,754	10,365,384	15,099,147

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GREATER Steaming Capacity

Hauls More Tonnage

The ability of a locomotive to haul its tonnage and maintain the schedule is directly proportionate to its steaming capacity.

The Elesco feed water heater will increase the steaming capacity of a locomotive 12%-15% with a proportionate increase in the gross ton miles per hour.

5,000 locomotives in the United States and Canada have increased their hauling capacity through the application of Elesco feed water heaters.

Elesco Feed Water Heater

A—1093

ELESCO

THE SUPERHEATER COMPANY

Representative of American Throttle Company, Inc.

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Tangential Steam Dryers Superheaters Feed Water Heaters Exhaust Steam Injectors Superheated Steam Pyrometers American Throttles

Revenues and Expenses of Railways

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1936—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depr. & retir. 1936	1935	Before depr. & ret.
Green Bay & Western	Aug.	234	$121,688	$1,065	$129,429	$35,952	$13,314	$5,760	$43,030	$102,121	78.9	$27,308	$16,072	$7,477	$16,944	$11,410
	8 mos.	234	1,004,744	6,755	1,056,200	238,305	121,218	46,795	359,162	797,991	75.5	258,209	179,482	121,665	98,914	154,013
Gulf & Ship Island	Aug.	259	100,846	10,720	123,436	21,115	24,697	3,285	56,631	110,698	89.7	12,738	—2,730	—12,621	5,302	—8,822
	8 mos.	259	792,078	70,760	964,214	147,280	138,485	27,144	474,719	834,711	86.6	129,503	9,247	—69,505	—58,877	—37,666
Gulf, Mobile & Northern	Aug.	936	605,567	31,965	659,411	65,832	92,316	36,186	156,406	380,579	57.72	278,832	219,832	154,756	108,886	176,950
	8 mos.	936	4,298,797	200,328	4,683,913	500,604	703,079	285,567	1,238,819	2,961,201	63.22	1,722,712	1,331,933	844,334	596,065	999,769
Illinois Central	Aug.	4,972	6,745,819	834,418	8,141,425	825,276	1,907,587	216,843	2,951,089	6,313,255	77.5	1,828,170	1,195,036	954,252	469,524	1,499,618
	8 mos.	4,975	52,109,567	5,966,929	63,198,472	5,882,453	14,205,609	1,824,158	24,029,713	49,218,528	77.9	13,979,944	9,108,573	7,363,450	5,859,291	11,736,611
Yazoo & Mississippi Valley	Aug.	1,619	1,143,551	95,767	1,313,903	119,897	211,061	31,542	464,456	883,628	67.3	430,275	292,922	199,538	52,813	242,618
	8 mos.	1,619	8,137,791	566,797	9,332,060	798,914	1,551,439	266,928	3,627,818	6,687,787	71.7	2,644,273	1,584,365	876,455	—47,964	1,219,779
Illinois Central System	Aug.	6,592	7,889,370	930,185	9,455,328	945,173	2,118,648	248,385	3,415,545	7,196,883	76.1	2,258,445	1,487,518	1,160,328	527,337	1,748,774
	8 mos.	6,594	60,247,358	6,533,726	72,530,532	6,681,367	15,757,048	2,091,086	27,657,531	55,906,315	77.1	16,624,217	10,680,196	8,310,202	5,865,402	13,026,687
Illinois Terminal	Aug.	508	373,551	72,128	494,482	52,197	69,994	15,033	153,353	308,589	62.40	185,900	143,428	127,533	107,567	146,610
	8 mos.	512	3,007,700	549,267	3,872,033	401,821	536,572	127,782	1,267,027	2,476,025	63.95	1,396,008	1,103,999	959,792	681,229	1,112,002
Kansas City Southern	Aug.	878	1,111,444	21,298	1,246,777	111,362	187,311	46,106	329,886	741,693	59.5	505,084	398,584	314,340	176,614	343,638
	8 mos.	878	7,887,362	144,076	8,861,089	765,951	1,350,721	382,594	2,464,364	5,511,039	62.2	3,350,050	2,643,050	2,114,602	734,892	2,345,668
Kansas Oklahoma & Gulf	Aug.	326	227,024	662	230,464	34,992	24,029	7,977	46,013	108,161	46.9	122,303	97,553	73,001	60,007	75,092
	8 mos.	326	1,612,733	4,242	1,638,051	209,841	177,037	62,419	359,146	779,965	47.6	858,086	690,692	531,111	324,411	547,810
Lake Superior & Ishpeming	Aug.	160	365,230	130	421,345	37,017	18,303	964	54,653	117,142	27.8	304,203	242,983	241,504	205,023	254,775
	8 mos.	160	1,562,119	783	1,783,674	226,278	207,577	5,157	298,688	786,096	44.1	997,578	708,228	697,262	392,113	803,632
Lehigh & Hudson River	Aug.	96	119,431	86	120,430	10,744	16,059	3,766	45,440	82,114	68.2	38,316	25,801	13,980	15,431	17,664
	8 mos.	96	1,012,580	888	1,019,705	119,582	153,600	29,077	384,620	738,897	72.5	280,808	181,762	83,472	127,132	113,660
Lehigh & New England	Aug.	218	307,114	260	310,388	31,678	65,460	6,021	110,724	228,192	73.5	82,196	58,933	64,938	35,750	83,114
	8 mos.	219	2,583,007	2,266	2,606,390	272,115	566,242	49,390	923,469	1,934,403	74.2	671,987	515,319	510,296	605,285	655,325
Lehigh Valley	Aug.	1,331	3,372,308	231,822	3,850,141	202,850	641,992	113,368	1,579,899	2,696,805	70.0	1,153,336	939,141	777,919	—115,588	967,824
	8 mos.	1,334	27,584,263	1,743,531	31,417,083	1,947,224	5,411,158	899,333	13,574,204	23,145,605	73.7	8,271,478	6,620,825	5,250,491	2,767,720	6,781,347
Louisiana & Arkansas	Aug.	606	455,029	10,494	484,379	61,431	60,472	28,286	116,070	288,628	59.6	195,751	152,318	132,999	114,026	147,277
	8 mos.	606	3,546,205	79,364	3,763,668	505,290	515,336	223,885	928,677	2,312,143	61.4	1,451,525	1,112,971	936,984	684,086	1,051,607
Louisiana, Arkansas & Texas	Aug.	255	106,328	423	113,932	28,438	9,438	4,605	32,321	79,498	69.8	34,434	27,532	9,619	3,103	10,370
	8 mos.	255	804,944	2,108	847,070	219,352	81,123	37,099	260,473	633,948	74.8	213,122	177,476	49,429	16,869	55,422
Louisville & Nashville	Aug.	4,981	6,281,001	625,935	7,358,728	732,473	1,622,417	176,951	2,389,567	5,233,021	71.1	2,125,707	1,612,286	1,693,612	1,030,581	2,041,724
	8 mos.	4,999	48,989,763	4,263,437	57,290,203	5,894,423	13,127,856	1,446,161	19,334,840	42,331,790	73.9	14,958,413	11,271,338	11,450,160	8,250,052	14,237,302
Maine Central	**Aug.**	1,046	760,083	120,940	976,934	174,758	120,432	12,035	349,039	695,157	71.2	281,776	216,052	170,092	135,072	214,320
	8 mos.	1,046	6,524,496	660,612	7,925,400	1,469,077	1,359,509	92,340	3,031,443	6,268,869	79.1	1,656,531	1,138,137	683,015	1,088,205	1,039,125
Midland Valley	Aug.	351	136,071	8	138,120	20,583	12,449	2,317	30,305	68,928	49.9	69,192	59,666	50,023	53,901	52,156
	8 mos.	355	942,948	111	957,765	129,045	105,494	18,540	239,791	534,866	55.8	422,899	354,419	291,613	222,127	308,631
Minneapolis & St. Louis	Aug.	1,530	837,601	12,796	889,809	116,638	122,278	39,362	299,632	615,671	69.2	274,138	232,417	167,488	103,791	195,397
	8 mos.	1,590	5,546,148	96,339	5,930,297	743,590	974,792	287,839	2,407,192	4,708,840	79.4	1,221,457	886,337	500,316	—212,416	729,224
Minn., St. Paul & S. S. Marie	Aug.	4,296	2,314,786	176,716	2,724,970	304,995	368,965	56,724	911,787	1,760,561	64.6	964,409	772,640	582,062	166,905	683,514
	8 mos.	4,296	15,098,527	884,762	17,376,597	2,374,378	2,960,975	478,518	7,051,109	13,776,941	79.3	3,599,656	2,292,239	1,194,366	—158,304	2,009,483
Duluth, South Shore & Atlantic	Aug.	550	245,117	19,076	292,781	34,690	41,768	4,390	91,359	176,861	60.4	115,920	102,608	91,622	38,655	99,296
	8 mos.	550	1,669,421	97,576	1,937,631	271,359	288,306	34,710	684,687	1,319,052	68.1	618,579	526,809	456,944	250,680	518,869
Spokane International	Aug.	163	83,627	1,553	91,358	20,022	7,728	1,845	23,466	57,096	62.5	34,262	29,084	25,051	18,109	26,654
	8 mos.	163	450,532	11,650	507,135	111,714	51,696	14,947	168,719	380,756	75.1	126,379	88,489	58,621	—10,956	70,526
Mississippi Central	Aug.	150	80,323	1,705	84,515	15,533	11,734	6,797	21,313	60,544	71.6	23,971	20,152	16,015	8,600	18,264
	8 mos.	150	568,255	10,723	597,142	95,373	90,300	54,814	161,228	443,505	74.3	153,637	124,639	96,075	20,793	114,036
Missouri-Arkansas	Aug.	364	77,175	1,665	83,891	25,917	10,901	5,077	29,412	76,914	91.7	6,977	3,759	—5,073	15,316	—4,240
	8 mos.	364	614,022	10,367	670,389	157,711	81,187	36,847	224,846	538,623	80.3	131,766	110,097	42,589	52,823	49,259
Missouri-Illinois	Aug.	208	78,979	880	81,979	21,576	11,428	2,559	31,391	72,280	88.2	9,699	6,814	—5,896	—2,102	—2,759
	8 mos.	208	691,863	5,115	710,934	155,887	96,408	19,921	239,857	551,205	77.5	159,729	115,203	34,495	32,436	62,011
Missouri-Kansas-Texas Line	Aug.	3,293	2,279,878	230,098	2,733,764	349,882	434,886	113,078	886,188	1,925,204	70.4	808,560	610,959	396,088	256,520	503,148
	8 mos.	3,293	16,818,802	1,504,133	20,133,011	2,588,436	3,746,042	935,061	7,013,457	15,424,607	76.6	4,708,404	3,290,451	1,633,082	—220,457	2,489,698
Missouri Pacific	Aug.	7,216	6,710,851	515,928	7,854,240	1,160,454	1,478,526	239,193	2,623,088	5,803,813	73.9	2,050,427	1,603,198	1,078,799	508,506	1,427,792
	8 mos.	7,227	49,701,129	3,288,140	57,742,804	7,779,023	11,369,781	1,927,013	20,634,497	44,118,683	76.4	13,624,121	10,165,660	6,236,169	2,332,764	9,035,874
Gulf Coast Lines	Aug.	1,763	777,361	43,467	874,546	148,741	181,493	48,789	297,845	725,389	82.94	149,157	82,714	22,309	—27,820	55,785
	8 mos.	1,763	7,394,259	278,634	8,103,648	1,270,122	1,475,982	357,463	2,557,228	6,041,720	74.56	2,061,928	1,550,996	683,178	332,392	955,816

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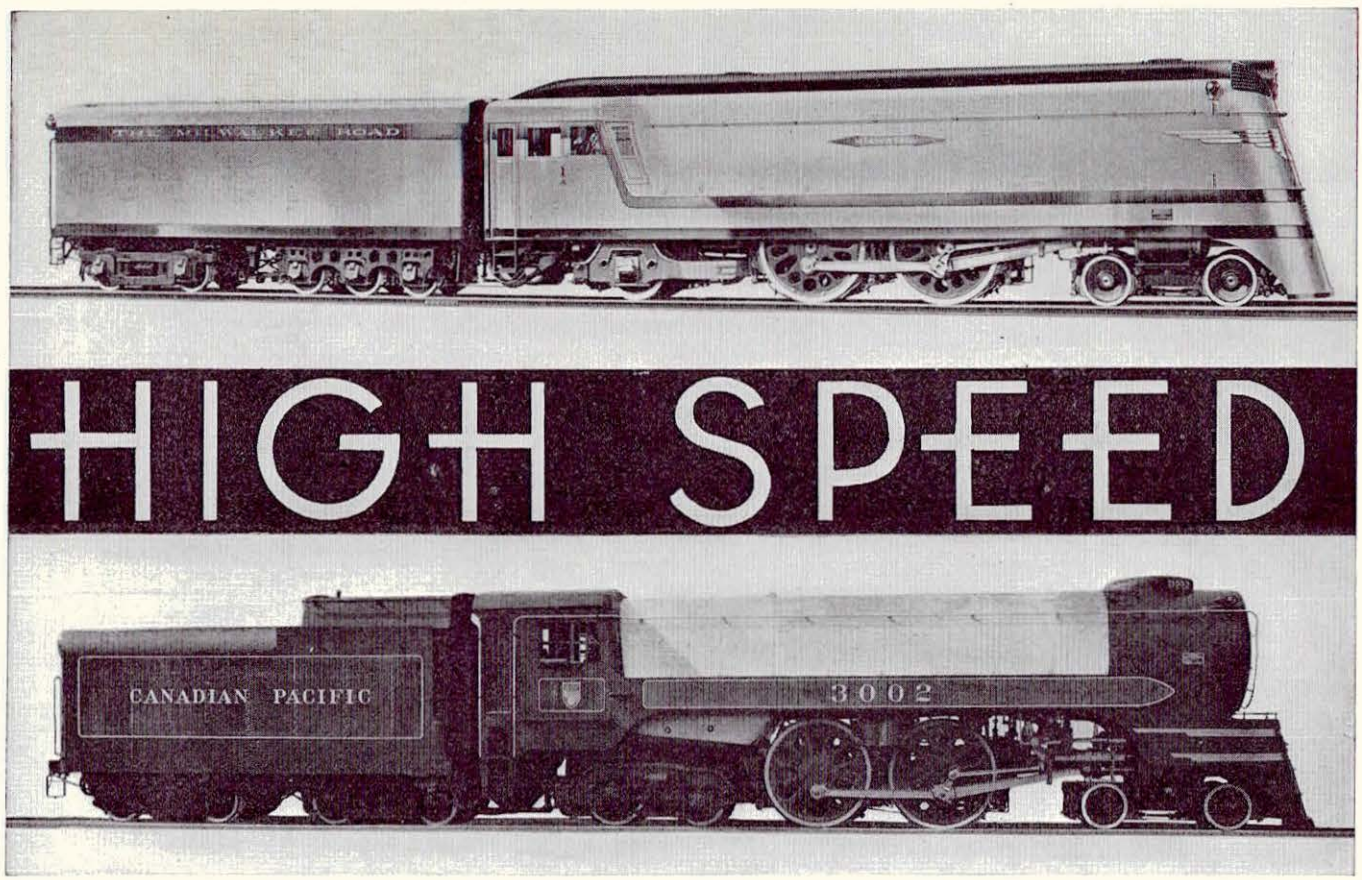

FOR high speed passenger service over long runs, with due consideration for the comfort and safety of the traveler, and economy for the operating company, the American Locomotive Company is more convinced than ever that the modern steam locomotive is best suited to the principles demanded by good railroading. » » » »

ALCO

AMERICAN LOCOMOTIVE COMPANY

30 CHURCH ST., NEW YORK, N.Y.

Revenues and Expenses of Railways

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1936—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depr.& retir.: 1936	1935	Before depr.& ret.
International-Great Northern	Aug.	1,154	$820,617	$102,116	$1,029,603	$145,358	$199,185	$30,604	$407,918	$837,729	81.36	$191,874	$138,866	$49,017	$19,719	$81,192
	8 mos.	1,154	6,429,760	579,266	7,789,485	1,134,566	1,569,066	243,925	3,245,453	6,630,487	85.12	1,158,998	751,005	—10,574	341,019	235,764
Mobile & Ohio	Aug.	1,201	824,463	41,914	910,190	119,795	182,401	41,916	313,629	698,261	76.7	211,929	161,346	123,964	61,464	175,266
	8 mos.	1,201	6,148,132	232,380	6,743,013	846,054	1,471,562	328,647	2,459,450	5,431,048	80.5	1,311,965	930,826	518,775	—72,630	929,303
Monongahela	Aug.	171	337,653	883	340,599	41,597	30,494	417	68,179	143,421	42.1	197,178	173,884	99,438	84,210	105,016
	8 mos.	173	2,974,064	7,371	2,997,877	299,745	234,296	3,398	626,372	1,189,693	39.7	1,808,184	1,631,095	982,931	782,740	1,028,612
Montour	Aug.	57	232,401	.....	233,598	12,309	36,417	909	47,561	104,327	44.7	129,271	101,410	121,236	110,363	132,274
	8 mos.	57	1,469,047	129	1,478,564	113,185	328,497	7,523	344,217	851,313	57.6	627,251	472,971	610,714	584,595	698,564
Nashville, Chatt. & St. Louis	Aug.	1,154	1,017,266	93,856	1,215,559	147,651	282,001	56,258	445,658	996,564	82.0	218,995	173,987	167,329	—62,357	209,863
	8 mos.	1,154	7,388,833	729,879	9,072,229	1,182,471	2,184,732	485,204	3,577,292	7,947,367	87.6	1,124,862	762,265	688,687	191,113	1,041,990
Nevada Northern	Aug.	165	40,071	618	45,163	8,834	5,205	800	8,192	27,087	59.9	18,076	9,575	12,523	10,269	18,478
	8 mos.	165	310,860	9,103	357,445	66,168	30,097	6,856	72,909	207,492	58.0	149,953	86,657	109,297	27,645	156,890
New York Central	Aug.	11,214	20,917,511	5,612,962	29,938,319	3,631,047	6,095,747	562,182	10,545,856	22,234,995	74.3	7,703,324	5,552,122	4,379,509	2,762,139	5,733,944
	8 mos.	11,214	164,531,825	40,703,194	230,970,941	23,600,296	49,227,446	4,334,889	85,543,804	174,335,956	75.5	56,634,985	39,464,133	28,323,905	19,567,160	39,121,499
Pittsburgh & Lake Erie	Aug.	233	1,879,351	72,269	2,000,468	165,465	614,966	25,081	567,497	1,453,673	72.7	546,795	378,545	532,289	460,430	682,803
	8 mos.	233	12,816,771	477,120	13,642,806	1,275,539	4,114,627	210,169	4,277,094	10,539,578	77.3	3,103,228	1,954,997	3,312,961	2,560,404	4,516,473
New York, Chicago & St. Louis	Aug.	1,704	3,389,081	105,166	3,622,041	383,588	512,880	113,689	1,108,707	2,256,995	62.3	1,365,046	1,109,985	821,437	516,052	949,757
	8 mos.	1,704	25,180,722	640,250	26,734,559	2,575,830	3,850,497	907,443	8,817,308	17,194,251	64.3	9,540,308	7,939,736	5,711,354	3,748,423	6,741,167
New York, New Haven & Hartford	Aug.	2,038	3,544,192	2,195,473	6,423,053	717,045	1,098,629	102,913	2,368,132	4,671,590	72.7	1,751,463	1,271,463	722,439	548,952	1,008,982
	8 mos.	2,049	28,828,361	15,903,444	50,432,345	6,785,837	8,854,636	793,633	19,369,337	38,982,235	77.3	11,450,110	7,740,110	3,226,597	5,429,451	5,521,811
New York Connecting	Aug.	20	223,746	.....	233,994	13,824	7,235	.....	26,825	48,917	20.9	185,077	149,987	128,560	82,256	128,560
	8 mos.	20	1,777,293	.....	1,865,979	92,128	62,379	.....	260,014	424,702	22.8	1,441,277	1,162,697	920,563	818,398	920,563
New York, Ontario & Western	Aug.	566	567,667	143,809	763,218	85,985	143,381	12,911	297,826	561,315	73.5	201,903	152,171	103,344	50,553	128,029
	8 mos.	566	5,235,014	392,671	6,052,581	624,969	1,112,901	94,165	2,498,825	4,534,078	74.9	1,518,503	1,149,409	851,154	820,015	1,049,272
Norfolk & Western	Aug.	2,166	7,828,034	232,773	8,258,868	1,035,283	1,347,750	116,842	1,662,818	4,323,328	52.3	3,935,540	2,599,327	2,885,172	2,371,346	3,262,092
	8 mos.	2,166	55,602,594	1,431,949	58,798,138	7,151,723	9,176,501	991,633	12,983,266	31,877,831	54.2	26,920,307	18,454,365	20,500,273	15,099,725	23,502,307
Norfolk Southern	Aug.	834	333,727	12,344	357,954	72,151	49,988	21,283	135,061	296,917	82.9	61,037	29,355	12,974	6,898	24,047
	8 mos.	834	2,754,835	62,783	2,942,425	546,424	398,574	178,295	1,109,647	2,389,954	81.2	552,471	317,658	180,871	250,571	269,227
Northern Pacific	Aug.	6,727	5,059,274	438,197	6,070,513	602,434	1,122,592	153,122	2,075,190	4,338,987	71.5	1,731,526	1,151,090	1,389,863	1,006,567	1,648,131
	8 mos.	6,727	31,335,808	2,805,408	37,844,219	4,867,146	8,595,131	1,292,692	14,727,041	32,266,638	85.3	5,577,581	1,197,668	3,645,997	1,163,193	5,749,990
Northwestern Pacific	Aug.	351	283,232	91,231	407,449	41,836	59,733	4,428	169,543	289,083	70.9	118,366	111,167	101,337	90,515	115,366
	8 mos.	351	1,598,826	604,692	2,436,498	340,318	428,181	32,993	1,215,274	2,126,360	87.3	310,138	225,373	170,371	—58,991	281,691
Oklahoma City-Ada-Atoka	Aug.	132	37,208	476	40,483	8,797	3,790	799	11,327	26,529	65.5	13,954	9,406	3,055	4,992	3,062
	8 mos.	132	341,023	3,226	362,676	58,423	15,704	5,959	88,131	183,153	50.5	179,523	156,152	111,598	40,410	111,656
Pennsylvania	Aug.	10,371	28,701,239	5,821,593	37,807,085	3,397,692	7,735,092	648,000	12,450,444	26,142,247	69.1	11,664,838	8,345,928	7,577,703	4,859,930	9,475,656
	8 mos.	10,415	211,083,237	44,081,892	280,523,476	25,204,576	57,403,800	5,076,767	98,521,939	201,356,940	71.8	79,166,536	57,181,207	50,665,868	43,307,193	65,243,870
Long Island	Aug.	396	512,685	1,902,721	2,533,912	96,166	404,180	27,300	977,579	1,585,431	62.6	948,481	553,355	374,470	156,529	471,605
	8 mos.	396	4,305,135	11,984,308	17,048,168	1,184,395	2,978,247	153,789	7,744,569	12,605,498	73.9	4,442,670	2,318,812	1,041,445	517,308	1,817,902
Pennsylvania-Reading Seashore Lines	Aug.	412	292,995	711,347	1,040,535	51,655	89,155	16,190	393,406	579,663	55.7	460,872	312,068	128,453	34,081	135,730
	8 mos.	412	2,048,166	2,254,706	4,486,824	474,221	616,209	94,204	2,347,740	3,757,752	83.8	729,072	—24,522	—809,922	—1,121,920	—751,654
Pere Marquette	Aug.	2,115	2,114,173	137,105	2,436,232	314,795	539,752	66,430	868,348	1,889,221	77.5	547,011	358,011	272,424	296,363	481,953
	8 mos.	2,115	18,974,317	651,950	20,753,301	2,328,707	4,352,654	515,927	7,486,408	15,462,110	74.5	5,291,191	3,998,323	3,227,539	2,358,114	4,917,078
Pittsburg & Shawmut	Aug.	103	31,096	124	31,791	9,054	13,881	941	11,835	38,108	119.9	—6,317	—7,722	—4,618	—11,237	1,182
	8 mos.	103	324,237	2,440	332,642	87,420	127,311	9,887	114,287	363,376	109.2	—30,734	—40,926	—21,222	42,144	25,256
Pittsburgh & West Virginia	Aug.	138	309,591	.....	326,671	57,465	74,067	16,921	60,875	233,758	71.6	92,913	66,508	92,655	82,532	114,261
	8 mos.	138	2,345,528	.....	2,482,291	285,087	564,594	132,419	485,940	1,662,615	67.0	819,676	625,511	869,173	599,076	1,046,534
Pittsburg, Shawmut & Northern	Aug.	190	74,294	13	75,499	17,250	18,900	1,339	28,361	72,255	95.7	3,244	928	—5,645	—3,745	—2,964
	8 mos.	190	657,437	362	668,946	141,928	137,092	10,979	247,827	590,712	88.3	78,234	60,189	12,505	3,767	33,978
Reading	Aug.	1,456	4,199,406	321,022	4,712,083	342,779	813,988	74,138	1,719,568	3,165,991	67.2	1,546,092	1,140,670	1,205,034	680,901	1,467,567
	8 mos.	1,456	34,166,831	2,619,009	38,419,347	2,802,072	6,580,982	596,905	14,720,632	26,531,838	69.1	11,887,509	8,642,777	8,908,304	7,489,293	11,029,778
Richmond, Fredericksburg & Potomac	Aug.	117	277,149	166,329	533,710	50,182	118,123	8,091	186,533	399,461	74.9	134,249	89,002	71,161	—5,103	97,519
	8 mos.	117	2,546,506	1,481,585	4,994,583	474,427	995,769	72,152	1,987,613	3,894,173	78.0	1,100,410	776,805	426,518	281,204	641,732
Rutland	Aug.	407	202,103	40,718	311,045	45,476	54,920	10,980	140,319	265,692	85.4	45,353	31,918	31,838	—21,415	43,299
	8 mos.	407	1,540,202	248,322	2,251,170	361,808	436,463	84,344	1,118,131	2,115,592	94.0	135,578	31,739	30,920	—133,462	123,136
St. Louis-San Francisco	Aug.	4,928	3,554,720	344,870	4,241,722	625,305	965,145	112,104	1,455,149	3,344,357	78.8	897,365	581,285	598,301	390,028	864,466
	8 mos.	4,928	25,592,300	2,170,339	30,419,530	4,496,338	7,340,845	904,447	11,093,628	25,257,215	83.0	5,162,315	2,794,573	2,902,640	506,575	5,050,112

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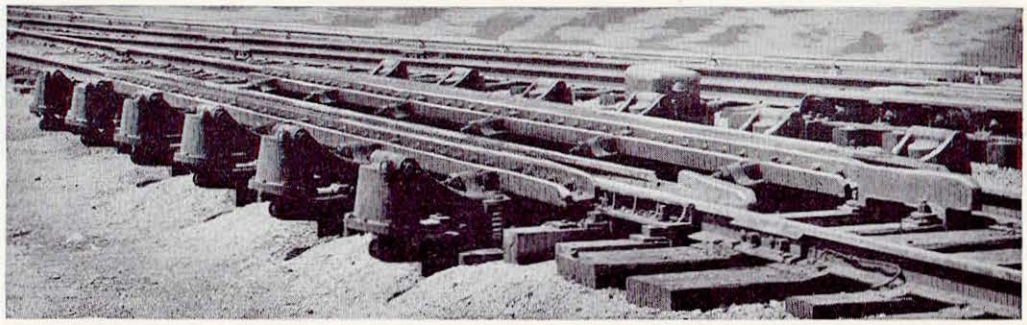

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Five years experience on sixteen roads, during which gratifying returns on the investment were made, indicate that "Union" Electro-Pneumatic Car Retarders increase the opportunities for large savings and improved safety in the operation of classification yards. The savings mentioned were made under abnormally low traffic conditions and in the five years paid their installation cost one and one-half times. These savings included large reductions in the cost per car classified, elimination of switching at other points and other operating and economic advantages. » » » » »

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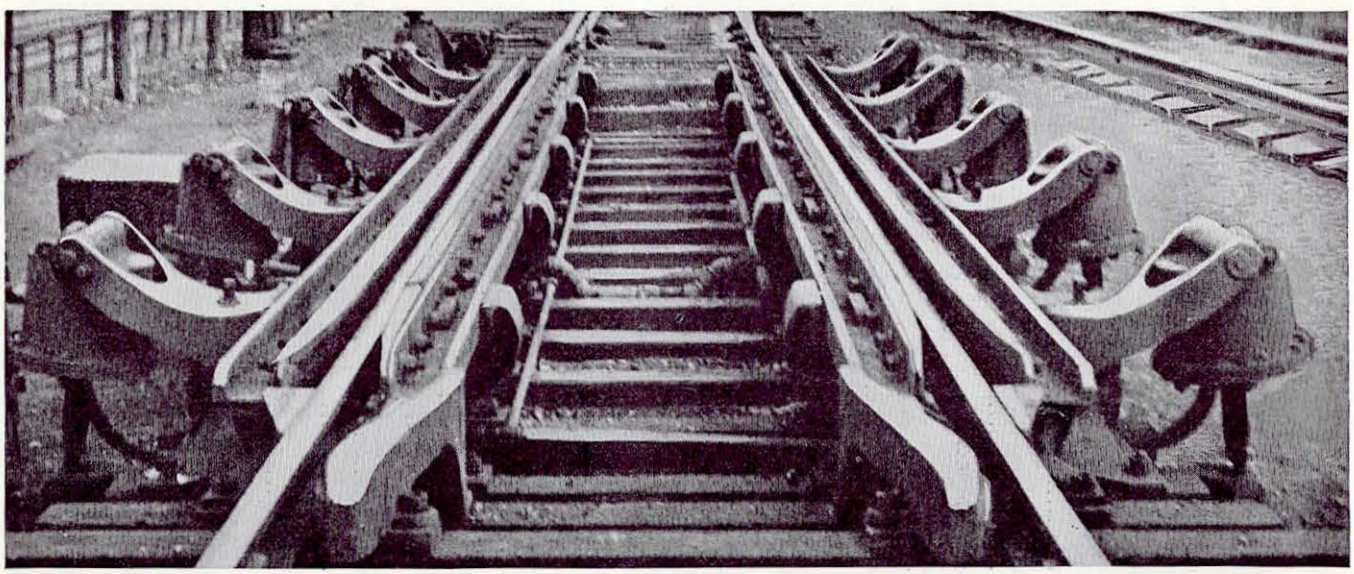


1881 **Union Switch & Signal Co.** 1936

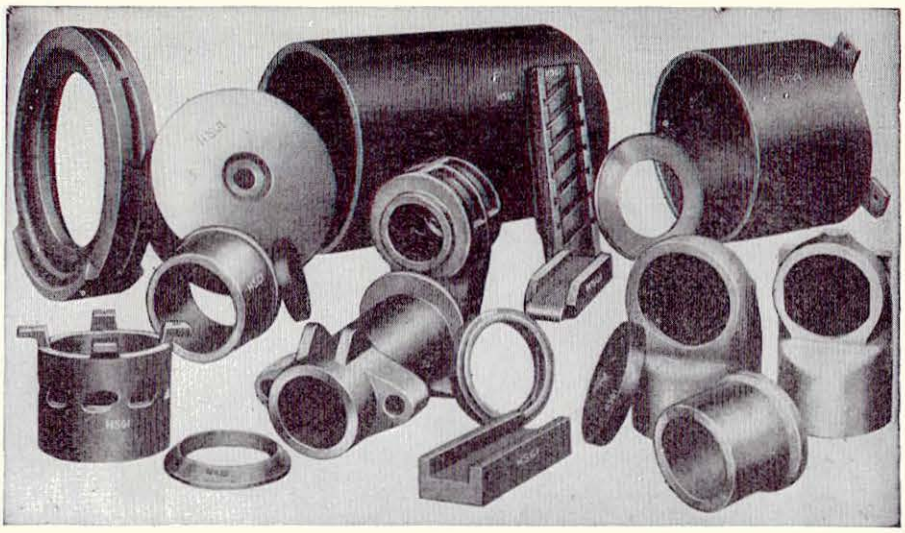
SWISSVALE, PA.

NEW YORK MONTREAL CHICAGO ST. LOUIS SAN FRANCISCO

Revenues and Expenses of Railways

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1936—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depr. & retir. 1936	After depr. & retir. 1935	Before depr. & ret.
Ft. Worth & Rio Grande	Aug.	233	$27,208	$1,645	$37,282	$11,249	$7,768	$1,869	$21,049	$44,204	118.6	—$6,922	—$11,083	—$17,204	—$15,137	—$17,153
	8 mos.	233	246,948	7,866	311,014	111,475	64,446	17,280	182,418	398,336	128.1	—87,322	—121,153	—178,875	—183,934	—178,469
St. Louis, San Francisco & Texas	Aug.	261	123,854	1,513	129,092	33,681	15,021	5,907	51,313	113,339	87.8	15,753	8,644	—21,831	—2,278	—21,729
	8 mos.	261	830,717	6,334	868,318	303,847	111,847	44,801	375,338	890,038	102.5	—21,720	—69,914	—325,793	—328,418	—324,724
St. Louis Southwestern Lines	Aug.	1,749	1,484,456	33,607	1,580,278	213,402	263,761	73,242	465,602	1,088,018	68.8	492,260	393,776	249,260	111,124	299,557
	8 mos.	1,775	11,767,607	172,269	12,398,800	1,471,763	1,961,577	604,695	3,816,988	8,419,270	67.9	3,979,530	3,246,524	1,951,511	1,512,211	2,355,394
Seaboard Air Line	Aug.	4,307	2,141,365	316,091	2,703,835	450,237	644,846	145,749	1,056,854	2,457,875	90.9	245,960	125,960	126,914	—198,024	283,893
	8 mos.	4,307	19,032,407	3,133,015	24,624,043	3,589,846	5,284,719	1,204,641	9,437,719	20,997,251	85.3	3,626,792	2,001,792	1,306,439	1,152,902	2,559,684
Southern Ry.	Aug.	6,641	6,669,660	958,212	8,288,429	949,883	1,470,554	149,434	2,737,781	5,607,807	67.7	2,680,622	2,200,833	1,924,041	1,239,066	2,193,939
	8 mos.	6,641	49,856,697	6,333,413	61,443,572	7,572,847	11,277,686	1,194,404	21,684,362	44,134,700	71.8	17,308,872	13,706,107	11,420,840	7,496,612	13,584,424
Alabama Great Southern	Aug.	315	476,398	61,726	578,098	92,826	124,632	12,854	171,188	422,547	73.1	155,551	116,951	103,704	46,839	127,093
	8 mos.	315	3,495,707	393,812	4,195,525	687,932	917,135	92,512	1,317,826	3,171,927	75.6	1,023,598	717,827	545,255	162,567	731,469
Cinn., New Orleans & Texas Pac.	Aug.	336	1,270,728	102,653	1,447,960	175,924	292,163	30,495	324,726	872,409	60.3	575,551	440,106	413,855	327,064	464,211
	8 mos.	336	9,579,826	788,474	10,967,380	1,385,465	2,026,045	211,025	2,619,074	6,619,361	60.4	4,348,019	3,452,426	3,183,912	2,201,730	3,583,933
Georgia Southern & Florida	Aug.	397	143,983	25,646	185,872	31,060	44,618	1,702	73,744	156,604	84.3	29,268	16,743	9,615	4,735	16,785
	8 mos.	397	1,028,994	339,760	1,525,985	250,954	320,711	14,811	674,606	1,316,872	86.3	209,113	108,824	35,484	16,937	92,173
New Orleans & Northeastern	Aug.	204	201,643	21,745	239,006	26,770	41,118	6,013	70,179	154,999	64.9	84,007	59,660	37,689	23,068	43,858
	8 mos.	204	1,463,888	149,384	1,739,864	229,152	276,124	44,082	557,405	1,190,668	68.4	549,196	362,246	188,689	83,570	237,621
Northern Alabama	Aug.	100	50,478	2,289	54,650	4,092	1,238	1,018	16,976	25,280	46.3	29,370	25,579	12,570	979	12,640
	8 mos.	100	423,478	14,852	453,221	80,668	11,344	9,577	139,371	254,837	56.2	198,384	166,652	71,387	—298	71,949
Southern Pacific	Aug.	8,772	10,449,947	2,007,079	13,524,755	1,228,778	2,059,068	319,977	5,051,419	9,522,725	70.4	4,002,030	3,222,754	2,541,822	1,662,563	3,017,133
	8 mos.	8,772	73,984,056	13,872,883	95,196,792	9,426,503	16,289,397	2,495,152	35,497,990	70,204,125	73.7	24,992,667	18,132,153	13,220,055	9,357,905	17,056,038
Southern Pacific Steamship Lines	Aug.	....	450,391	34,342	500,647	15,581	105,902	16,163	331,744	487,447	97.4	13,200	10,336	10,084	—15,506	45,452
	8 mos.	....	3,424,410	159,837	3,720,833	137,724	731,727	135,275	2,649,563	3,805,656	102.3	—84,823	—123,755	—125,769	—384,204	157,059
Texas & New Orleans	Aug.	4,430	2,785,208	343,993	3,409,454	510,898	685,849	122,782	1,145,635	2,694,316	79.0	715,138	511,530	378,228	97,400	512,883
	8 mos.	4,430	21,612,442	2,229,043	25,903,661	3,704,009	5,201,484	971,498	8,941,333	20,625,071	79.6	5,278,590	3,406,971	2,015,719	821,321	3,131,690
Spokane, Portland & Seattle	Aug.	946	711,500	72,106	837,167	107,813	89,129	9,222	255,928	491,780	58.7	345,387	274,209	204,612	199,442	221,124
	8 mos.	946	4,336,393	386,233	5,124,558	652,186	639,388	73,342	1,850,173	3,443,491	67.2	1,681,067	1,124,272	698,234	868,267	830,217
Tennessee Central	Aug.	286	206,347	5,153	222,514	42,812	29,555	5,433	66,656	153,625	69.0	68,889	51,224	34,647	38,630	40,618
	8 mos.	286	1,460,773	42,991	1,593,091	276,628	229,587	44,755	525,088	1,152,480	72.3	440,611	375,206	273,782	254,009	321,587
Texas & Pacific	Aug.	1,949	1,920,562	288,846	2,397,184	281,696	436,599	83,729	670,992	1,614,175	67.3	783,009	588,895	435,234	408,613	532,300
	8 mos.	1,949	14,643,502	1,714,603	17,770,352	1,994,716	3,231,298	613,032	5,376,739	12,300,304	69.2	5,470,048	4,307,680	3,275,406	2,816,834	4,053,660
Texas Mexican	Aug.	162	93,930	550	107,453	12,868	15,339	3,067	36,019	74,725	69.5	32,728	26,440	21,423	17,418	23,266
	8 mos.	162	782,090	3,696	868,464	139,665	121,497	26,674	281,313	626,660	72.2	241,804	194,009	144,257	167,544	158,971
Toledo, Peoria & Western	Aug.	239	206,429	2	209,182	76,828	14,945	17,111	46,864	164,449	78.6	44,733	34,644	15,733	29,141	27,886
	8 mos.	239	1,577,598	59	1,598,459	443,732	105,324	134,049	375,768	1,136,554	71.1	461,905	360,712	216,369	88,026	310,097
Union Pacific System	Aug.	9,918	11,532,674	1,683,068	14,361,377	1,627,926	2,686,781	295,705	4,348,450	9,840,762	68.5	4,520,615	3,362,745	2,481,578	2,502,165	3,024,977
	8 mos.	9,838	76,068,459	9,776,515	93,873,117	11,727,876	19,083,700	2,607,624	31,054,593	70,900,077	75.5	22,973,040	14,358,332	9,642,933	7,421,534	13,946,584
Utah	Aug.	111	56,785	.....	56,830	15,342	18,677	475	14,381	53,264	93.7	3,566	—3,560	477	—5,890	10,304
	8 mos.	111	616,826	.....	619,055	115,478	175,135	3,636	153,180	483,286	78.1	135,769	69,829	68,891	6,315	147,476
Virginian	Aug.	619	1,416,633	5,196	1,471,635	116,307	257,457	19,568	251,272	671,467	45.6	800,168	700,168	757,788	599,841	851,573
	8 mos.	619	10,566,908	31,181	11,015,574	847,518	1,991,697	148,901	1,892,095	5,120,685	46.5	5,894,889	4,929,889	5,345,894	4,530,487	6,092,954
Wabash	Aug.	2,447	3,196,110	213,218	3,670,274	494,788	595,587	141,569	1,379,281	2,770,550	75.5	899,724	685,959	389,684	245,673	566,530
	8 mos.	2,447	26,180,659	1,625,622	29,978,318	3,632,714	5,518,235	1,137,177	11,266,266	22,821,042	76.1	7,157,276	5,563,191	3,237,035	2,704,759	4,658,821
Ann Arbor	Aug.	293	304,493	6,109	336,290	31,549	75,056	11,992	134,068	265,849	79.1	70,441	52,964	41,658	39,225	61,619
	8 mos.	293	2,457,008	28,307	2,585,310	234,328	580,759	95,626	1,100,943	2,113,548	81.8	471,762	334,306	240,247	311,375	400,940
Western Maryland	Aug.	882	1,303,046	12,550	1,346,639	219,494	246,362	35,231	318,620	870,571	64.6	476,068	376,068	375,786	321,649	470,742
	8 mos.	882	10,165,473	64,247	10,498,691	1,385,343	2,237,176	293,270	2,632,898	6,953,830	66.2	3,544,861	2,774,861	2,846,634	2,580,914	3,606,780
Western Pacific	Aug.	1,207	1,345,997	47,359	1,427,076	358,731	276,249	54,184	506,865	1,240,358	86.9	186,718	98,229	47,523	57,573	98,394
	8 mos.	1,207	8,218,818	291,790	8,762,961	2,259,554	1,831,020	456,601	3,544,578	8,433,148	96.2	329,813	—314,108	—879,802	—200,596	—470,650
Wheeling & Lake Erie	Aug.	511	1,345,452	2,628	1,453,345	208,814	289,660	29,879	405,145	965,860	66.5	487,485	345,040	394,927	216,953	462,075
	8 mos.	511	9,307,077	14,763	9,894,882	1,400,652	2,344,176	243,049	2,909,432	7,150,214	72.3	2,744,668	1,735,001	2,014,370	1,294,354	2,710,073
Wichita Falls & Southern	Aug.	203	44,639	55	49,861	10,254	5,264	1,524	14,715	34,705	69.60	15,156	12,158	9,556	24,744	11,529
	8 mos.	203	312,529	843	362,014	71,539	46,824	12,819	112,693	268,839	74.26	93,175	67,830	50,473	63,866	66,113



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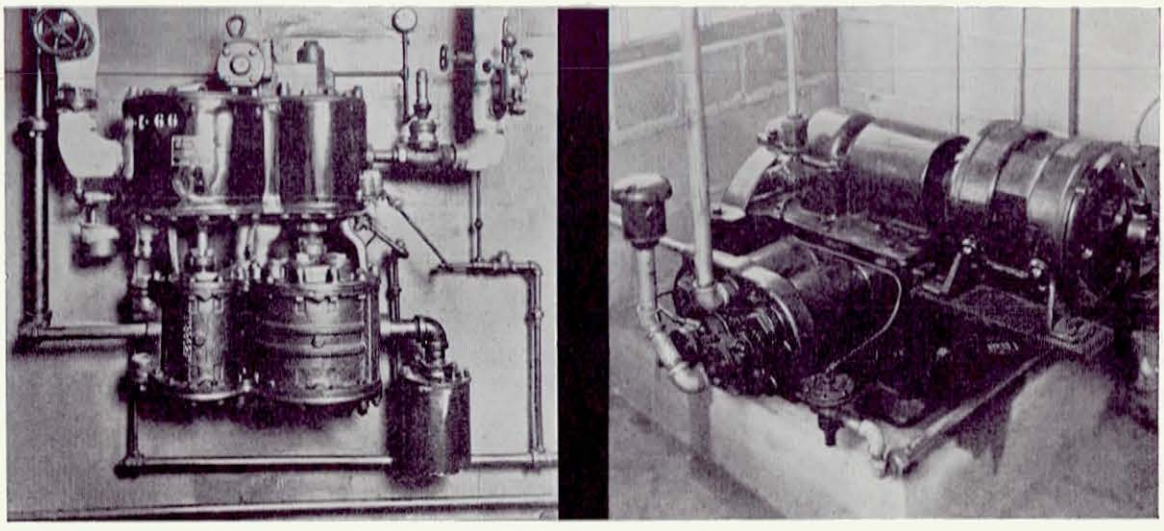

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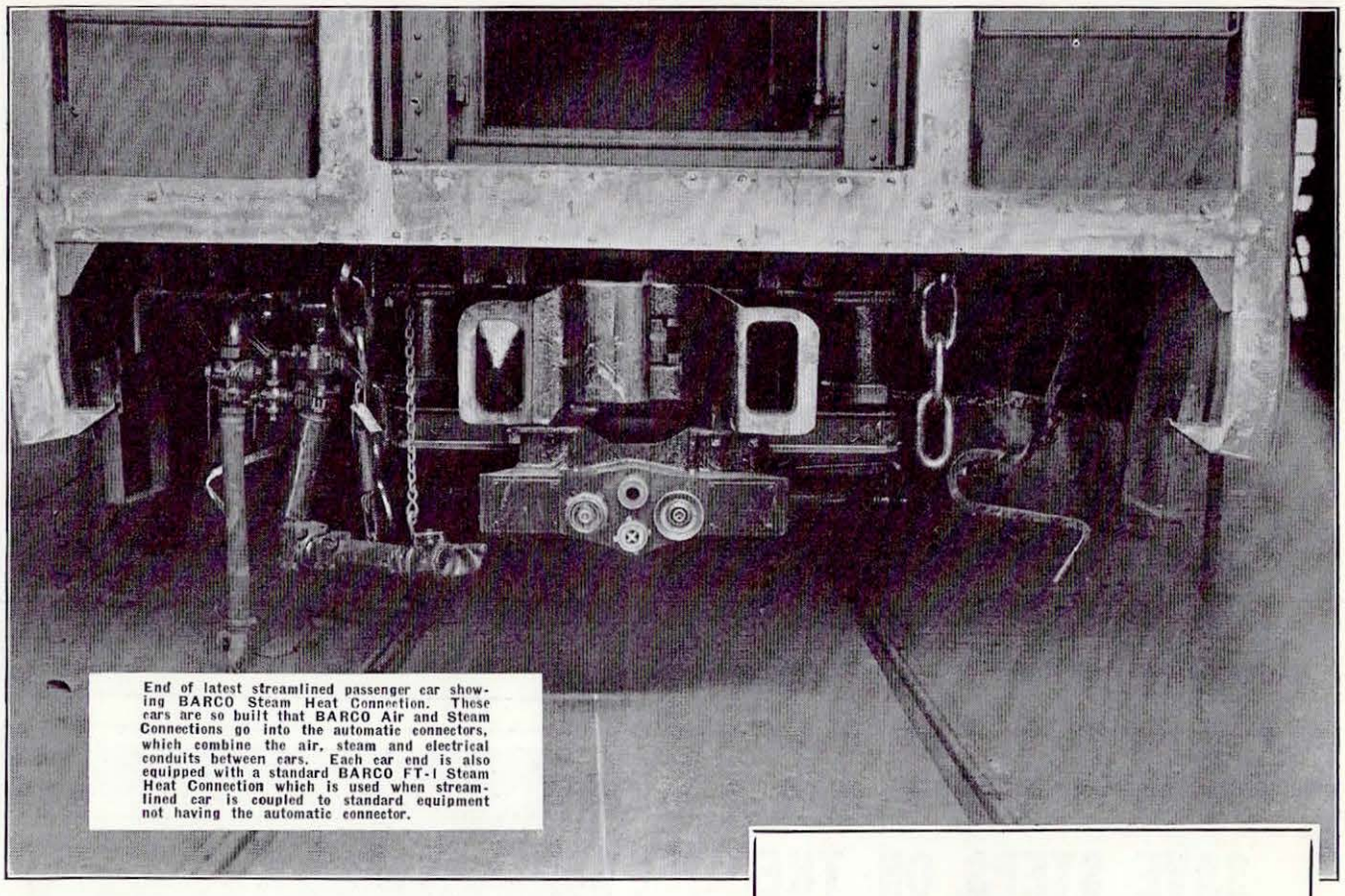

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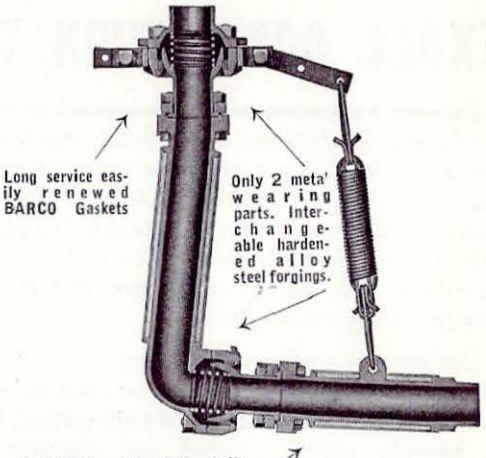
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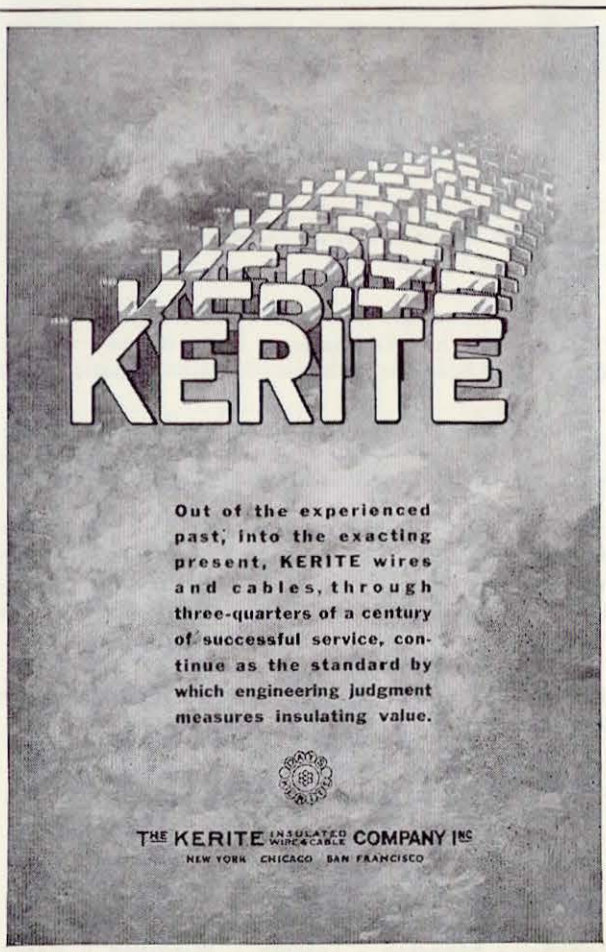
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STATEMENT of the ownership, management, circulation, etc., required by the Acts of Congress of August 24, 1912, and March 3, 1933, of *Railway Age, published weekly at Philadelphia, Pa., for October 1, 1936.*

State of New York } ss.
County of New York }

Before me, a *Notary Public* in and for the State and county aforesaid, personally appeared *Roy V. Wright,* who, having been duly sworn according to law, deposes and says that he is the *Managing Editor* of the *Railway Age* and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Simmons-Boardman Publishing Company, 30 Church St., New York City.

Editor, S. O. Dunn, 105 West Adams St., Chicago, Ill.
Managing Editor, Roy V. Wright, 30 Church St., New York City.

Business Managers, None.

2. That the owners are: Simmons-Boardman Publishing Company, 30 Church Street, New York, N. Y.; Simmons-Boardman Publishing Corporation, 30 Church Street, New York, N. Y.; Stockholders of 1 per cent or more of the total amount of stock are: I. R. Simmons, 15 Hillcrest Dr., Pelham Manor, N. Y.; P. A. Lee, Hopatcong, N. J.; Henry Lee, Hopatcong, N. J.; E. G. Wright, 398 N. Walnut Street, E. Orange, N. J.; S. O. Dunn, 105 West Adams Street, Chicago, Ill.; C. E. Dunn, 3500 Sheridan Blvd., Chicago, Ill.; L. B. Sherman, 375 Sheridan Road, Winnetka, Ill.; Mae E. Howson, 105 West Adams Street, Chicago, Ill.; Spencer, Trask & Company, 25 Broad Street, New York, N. Y. General partners of Spencer, Trask & Company are: E. M. Bulkley, Acosta Nichols, Cecil Barret, C. Everett Bacon, William R. Basset, F. Malbone Blodget, Henry S. Allen, Henry M. Minton, William Kurt Beckers, Arthur H. Gilbert, all of 25 Broad Street, New York, N. Y. Percival Gilbert, William E. Stanwood, both of 50 Congress Street, Boston, Mass., are General Partners; Henry A. Colgate, 25 Broad Street, New York, N. Y., Special Partner, and S. Bayard Colgate, Special Partner, 15 Exchange Place, Jersey City, N. J.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: *None.*

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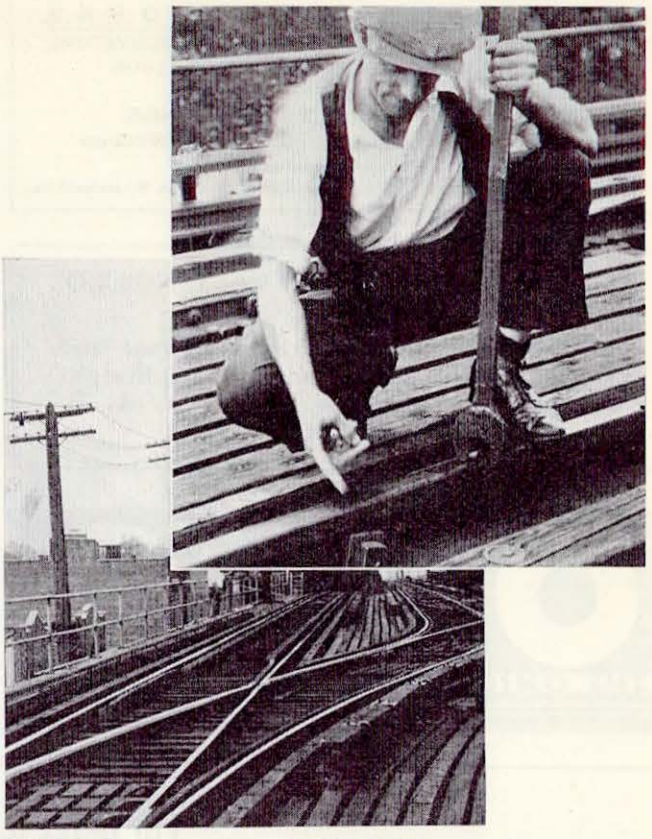
ROY V. WRIGHT.

Sworn to and subscribed before me this 1st day of October, 1936.

[Seal] H. D. NELSON.

(My commission expires March 30, 1937.)



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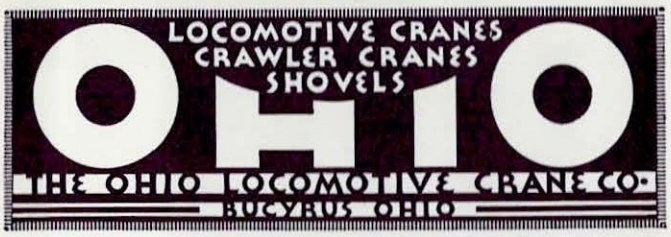

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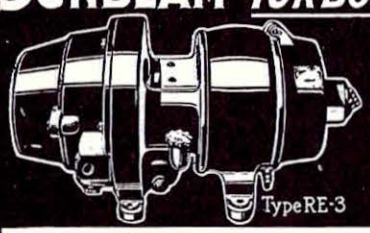

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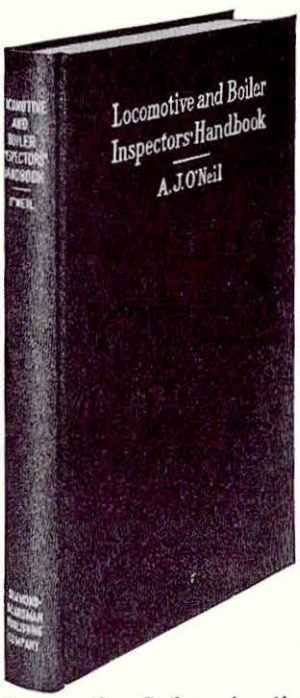

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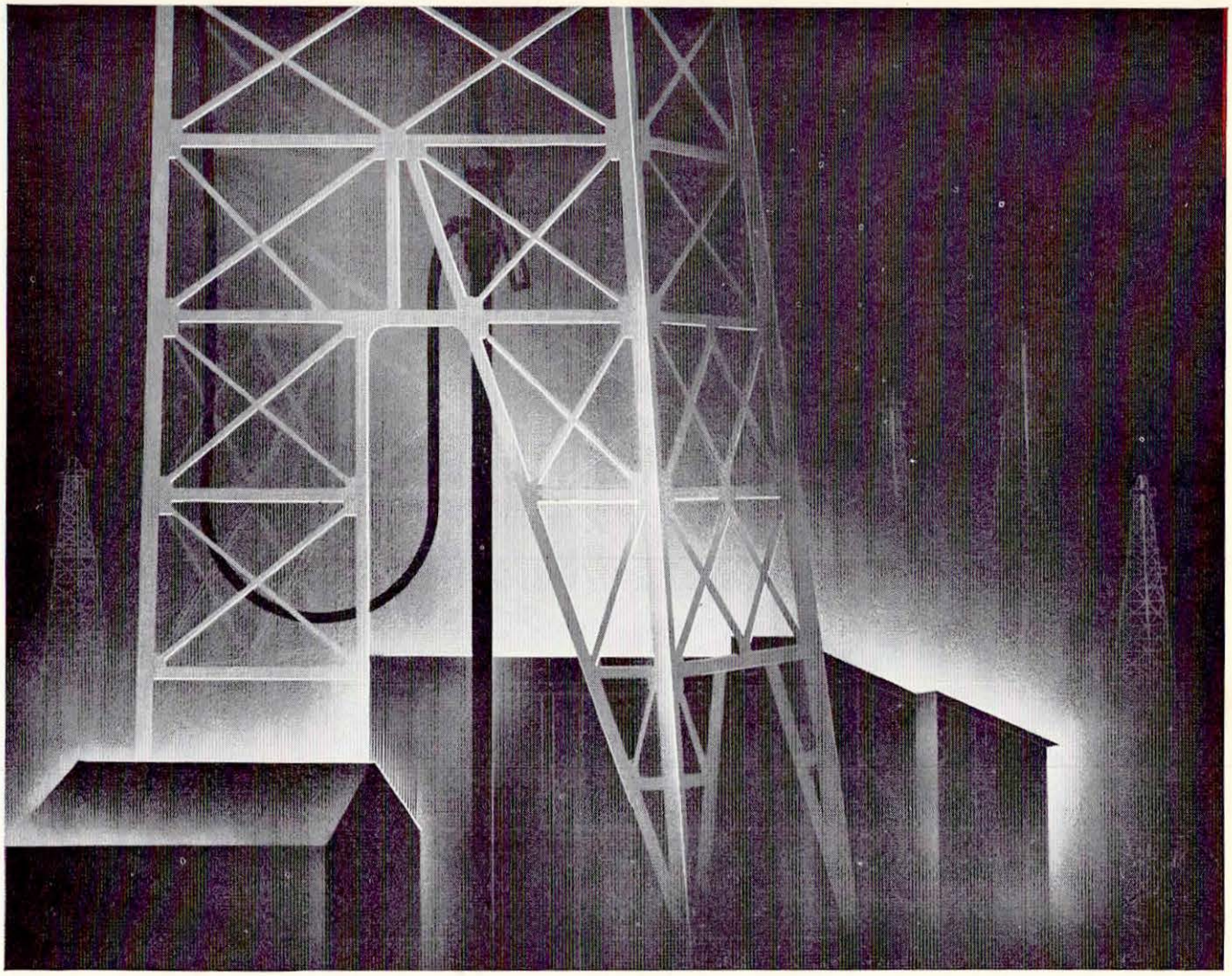

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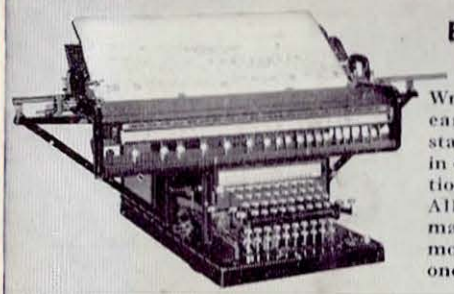

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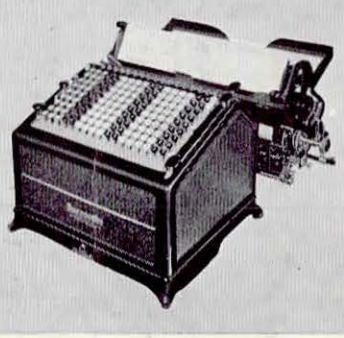

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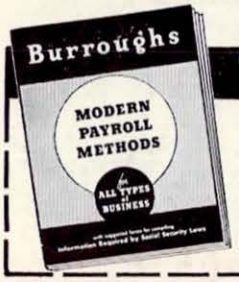

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